aeromet

MONTHLY PROGRESS REPORT NO. 22
for the period December 1-31, 1977
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

Utah U-a/U-b Tract

aeromet inc.

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TULSA, OKLAHOMA 74145

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1.0 INTRODUCTION

Low level temperature and wind data were collected for December, 1977 at Bonanza, Utah. The data were collected using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were scheduled for ½ hour after sunrise and 1400L.

The pilot balloon had an ascent rate of 500 ft/min and was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 16 ft AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The collected temperature and wind data are accurate and have not been edited unless otherwise stated in the Pilot Balloon Summary Section. However, the obvious errors sometimes found in the recorded azimuth and elevation angles are corrected without mention. For example, the sequence of azimuth angles . . . 76.6, 75.3, 47.8, 73.8 . . . can be corrected without ambiguity. The more ambiguous errors are brought to the attention of the reader if editing has been performed, otherwise, the data are left as recorded and the filtering is left to the individual user. An example is the wind profile for Hanksville on 06/29/76 at 1300 MST found in the Monthly Progress Report No. 4. The azimuth angles starting 30 seconds after the launch and incremented by the same are as follows . . . 109.0, 110.0, 110.0, 281.0, 280.0, 282.0 . . . , while the corresponding elevation angles are as follows . . . 60.0, 57.6, 58.7, 58.6, 52.7, 44.3 . . . . The wind speed and direction change dramatically over the interval as can be seen in the report since these data were not edited.

2.0 DATA SUMMARY

2.1 Utah U-a/U-b Bonanza Field Summary

During the month of December the observer attempted 41% of the scheduled launches resulting in 41% recovery of the temperature data and 32% recovery of the wind data. It first became evident that the observer was not releasing the pibals as scheduled in mid December as only 63% of the launches had been performed. Aeromet contacted the observer and was assured that all equipment was working properly and that the balloons were being released. The observer never indicated a desire to discontinue with the project; however, during the last two weeks of December Aeromet received data for only three additional launches.

2.2 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data can not be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height that a variety of "heat island" effects should be viewed. The rigorous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for these analyses 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

The symbol N/D means that no mixing layer height was defined and sfc is the abbreviation for surface.

2.3 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

3.0 DATA PROCESSING

3.1 Printed and Plotted Output

Wind speeds and directions are computed from the azimuth and elevation angles measured while tracking the balloon with the theodolite. The wind speed and direction are plotted versus height and printed out at 30 second intervals. The printed output includes the AGL and MSL height of the calculated wind value and the orthogonal components of the wind. The wind data are also written to magnetic tape.

The temperature data are processed and plotted with the temperature and the lapse rate per 300 meters versus height at 15 second intervals. Tic marks are placed on the temperature plot at significant levels. A solid line to the right side of the plot indicates the data for that layer are interpolated temperature values. The temperature data are also printed out and recorded on magnetic tape. The asterisk beside a height value indicates a significant level while a "?" indicates interpolated data.

The temperature data are also processed to produce a monthly summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classification scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States". Paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974. Santa Barbara, California.)

The temperature and wind data are processed together to produce a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the $\Delta T/100m$ criterion is met but the wind speed criterion is not met, then the wind data are checked

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED
A	<-1.9	≤ 2
B	-1.9 - -1.7	≤ 5
C	-1.7 - -1.5	≤ 6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤ 5
F	>1.5	≤ 3

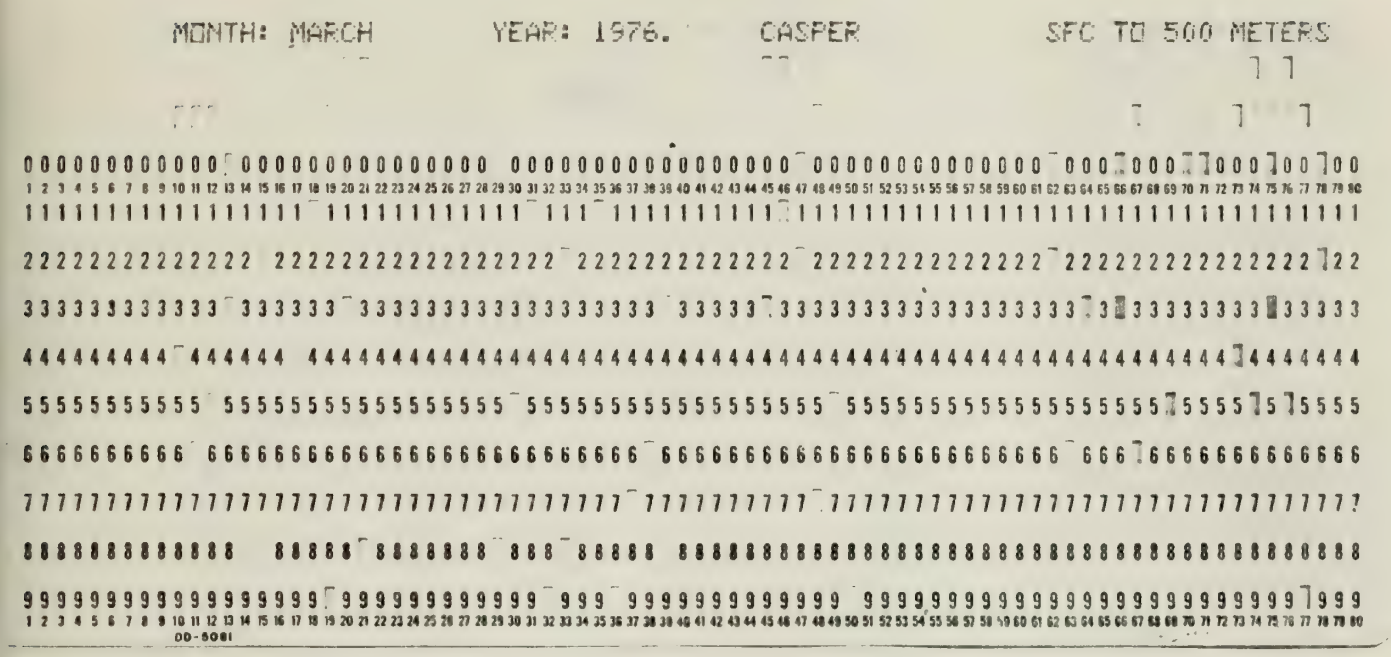
against the criterion for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the $\Delta T/100m$ value is

1.7 and the wind speed is 7 m/s, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m/s maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100 m and a wind speed value of 7 m/s are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce.

3.2 Punched Output

The punched output from the bivariate frequency distribution calculations include a header card as illustrated below, and the



punched distribution data for each wind direction under each stability class in agreement with the "star" output. The stability classes are number coded as follows:

STABILITY CLASS	NUMBER CODE
A	1
B	2
C	3
D	4
E	5
F	6
Independent of Stability	7

The station I.D. numbers are as follows:

STATION	I.D. NUMBER
Casper, Wyoming	1
Colorado C-b Tract	2
Craig, Colorado	3
Escalante, Utah	4
Hanksville, Utah	5
Rock Springs, Wyoming	6
Utah U-a/U-b Tract	7

The month and season number codes are as follows:

MONTH	1-12
SEASON	13 = DJF
	14 = MAM
	15 = JJA
	16 = SON
ANNUAL	17

PILOT BALLOON SUMMARY
Utah U-a/U-b
December, 1977

December 1	0726	
	AFTN	Observer missed launch.
December 3	0845	
	1332	
December 5	MORN	Observer missed launch.
	1404	Temperature values were interpolated over the interval from 1/4 to 1 1/2 minutes.
December 7	MORN	Observer missed launch.
	1401	
December 9	MORN	Observer missed launch.
	AFTN	Observer missed launch.
December 11	0801	Temperature values were interpolated over the intervals from 9 1/2 to 12 1/2 minutes, 18 1/2 to 21 1/4 minutes, 26 1/2 to 28 1/4 minutes, and 29 1/2 to 30 1/2 minutes. No wind data recorded.
	AFTN	Observer missed launch.
December 13	0731	
	1410	Temperature values were interpolated over the intervals from 20 1/2 to 21 1/2 minutes and 24 3/4 to 26 minutes.
December 15	0738	Temperature values were interpolated over the interval from 5 3/4 to 16 1/4 minutes.
	1411	Temperature values were interpolated over the intervals from 1/2 to 2 1/2 minutes, 11 1/2 to 12 3/4 minutes, and 19 to 20 1/2 minutes.

PILOT BALLOON SUMMARY
Utah U-a/U-b
December, 1977

December 17	MORN	Observer missed launch.
	AFTN	Observer missed launch.
December 19	0701	No wind observations recorded.
	1411	Balloon entered clouds after 3 minutes.
December 21	MORN	Observer missed launch.
	AFTN	" " "
December 23	MORN	" " "
	AFTN	" " "
December 25	MORN	" " "
	AFTN	" " "
December 27	MORN	" " "
	AFTN	" " "
December 29	MORN	Observer missed launch.
	1410	Balloon entered clouds before any wind observations could be made.
December 31	MORN	Observer missed launch.
	AFTN	Observer missed launch.

AVERAGE MIXING LAYER HEIGHT

Utah U-a/U-b Tract

December, 1977

DATE	0	+5°	+15°	0	+5°	+15°
1	sfc	1000m	2550m			
3	sfc	3150m	N/D	1150m	3700m	N/D
5				2050m	N/D	N/D
7				600m	1800m	3550m
9						
11	sfc	150m	300m			
13	sfc	100m	1200m	400m	1450m	1850m
15	400m	1400m	N/D	200m	2950m	N/D
17						
19	200m	N/D	N/D	600m	1600m	3050m
21						
23						
25						
27						
29				300m	1150m	3000m
31						

CLOUD COVER AND SIGNIFICANT WEATHER

Utah U-a/U-b

December, 1977

DATE	MORNING	AFTERNOON
1	overcast	
3	overcast	overcast
5		clear
7		scattered
9		
11	clear	
13	clear	clear
15	overcast	overcast
17		
19	scattered	overcast
21		
23		
25		
27		
29		overcast
31		

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5755

DATE 12/01/77 TIME 07:20MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	70.	2.68	0.0

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5754

DATE 12/03/77 TIME 08:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	1.45	0.0

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5772

DATE 12/03/77 TIME 13:32MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.58
100.	250.	-0.03
250.	500.	-1.05
500.	750.	-0.48
750.	1000.	-1.03
1000.	1500.	-0.08

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5756

DATE 12/05/77 TIME 10:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.82
100.	250.	-1.03
250.	500.	-1.00
500.	750.	-0.98
750.	1000.	-0.88
1000.	1500.	-1.03

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5752

DATE 12/07/77 TIME 14:01MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
621.	774.	0.07	-0.96

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5753

DATE 12/11/77 TIME 08:01MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE	INV TOP	INV DT/DZ	DT/DZ BELOW INV

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5753

DATE 12/11/77 TIME 0[illegible]MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	457.	1.77	0.0

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5751

DATE 12/13/77 TIME 07:51MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	152.	5.17	0.0

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5778

DATE 12/13/77 TIME 14:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1424.	1695.	1.08	-9.71

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5769

DATE 12/15/77 TIME 07:58MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
925.	961.	0.0	-0.79

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5768

DATE 12/15/77 TIME 14:11MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
686.	764.	0.0	-0.82

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5764

DATE 12/19/77 TIME 07:01MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
195.	309.	1.02	-1.05

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5766

DATE 12/19/77 TIME 14:11MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
438.	515.	0.13	-1.12

UTAH LAUB ELEV 1070 METERS SOUNDING ID 5702

DATE 12/29/77 TIME 1431GMT ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ ABLTHR INV (DEG C)/100M
251.	345.	2.00	-2.02

MONTH: DECEMBER YEAR: 1977 UTAH LAKE ELEV 1676 METERS

BOLZ-NORTHIS CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

INCREASE (METERS)	SEC	INVERSION BASE HEIGHT (M) 1-	101-	251-	501-	751-	1001-	1501-	2001-	2501-	TOTAL
		1 - 100	101 - 250	251 - 500	501 - 750	751 - 1000	1001 - 1500	1501 - 2000	2001 - 2500	2501 - 3000	
1 - 100	1	0	0	1	1	1	0	0	0	0	4
101 - 250	2		2		1	0	0	0	0		5
251 - 500	1			0	0	0	1	0	0	0	2
501 - 750					0	0	0	0	0	0	0
751 - 1000	0			0	0	0	0	0	0	0	0
1001 - 1500					0	0	0	0	0	0	0
> 1500	0			0	0	0	0	0	0	0	0
INV TOTAL	4	0	2	1	2	1	1	0	0	0	11

DT/DZ 5	0	0	0	0	0	0	0	0
FROM INV 4	0	0	0	0	1	1	0	0	0	2
BASE 3	0	1	1	2	0	0	0	0	0	4
TO 2	0	0	0	0	0	0	0	0	0	0
SFC 1	0	1	0	0	0	0	0	0	0	1

TO INV TOT	2	2	2	2	2	2	DT/DZ (DEG C)/100M
DT/DZ FOR 5	0	0	0	0	0	0	5= 0.00 TO =0.40
SAME 4	0	1	0	0	0	1	4=-0.41 TO -0.80
LAYERS 3	0	1	2	2	2	1	3=-0.81 TO -1.20
FROM INV 2	2	0	0	0	0	0	2=-1.21 TO -1.60
BASE 1	0	0	0	0	0	0	1=<-1.60

MONTH: DECEMBER YEAR: 1977 --- UTAH POWER --- SEC-1: 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 1-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
AVG SPEED								
TOTAL								

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 15 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

IN THE DECEMBER YEARS 1977 UTAH LAKE SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE								
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E								
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE								
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S								
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW								
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W								
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW								
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 15 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

IN THE DECEMBER YEAR: 1977 UTAH LAKE SPEEDS METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 1-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE								
SSE								
S								
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW								
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF [illegible] 0.0

A TOTAL OF 5 SUBSETS FROM A SAMPLE OF 13 SUBSETS DID NOT HAVE 5 OR MORE OF TEMP AND WIND DATA

MONTH: DECEMBER YEAR: 1977 UTAH DATA SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) -3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.11	0.0			0.0	0.0	0.5	0.11
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.1	0.0	0.22	0.11	0.0	0.0	7.0	0.33
			0.11				7.6	0.11
WSW	0.1	0.11	0.11	0.0	0.11	0.0	10.9	0.33
WNW	0.11	0.0	0.0	0.0	0.0	0.0	2.7	0.11
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	1.0	5.1	7.3	10.2	18.4	0.0		0.0
TOTAL	0.22	0.11	0.44	0.11	0.11	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE [illegible] STABILITY CLASS IS 0.90

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 15 SOUNDINGS DID NOT HAVE SUFFICIENT DATA

MONTHLY RECAPREW YEAR: 1977 UTAH HAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	1.00	0.0	0.0	0.0	0.0	0.0	2.7	1.00
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	2.7	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	1.00	0.0	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF [illegible] STABILITY CLASS 15 0.10

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 5 SOUNDINGS FROM A SAMPLE OF 15 SOUNDINGS DID NOT HAVE SUFFICIENT TEMP AND WIND DATA

MONTH: FEB HR: YEAR: 1977 UTAH LAKE SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 1-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE								
E								
ESE								
SE								
SSE	0.0							
S								
SSW	0.0							
SW								
WSW								
W								
WNW								
NW								
NNW	0.0							
AVG SPEED	0.0	0.0	0.0		0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF [illegible] OF TIME F STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALMS 0.0

A TOTAL OF [illegible] HOURLYS FROM A [illegible] FILE OF [illegible] HOURLYS DID NOT HAVE 500 M DF TEMP AND WIND DATA

[illegible] DECEMBER YEAR: 1977 [illegible] UTAH LAKE SPEC 10 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[illegible]	.10	0.0	0.0	0.0	0.0	0.0	0.5	0.10
[illegible]				0.0	0.0	0.0	0.0	
SSE				0.0	0.0	0.0		
S								
SSW								
SW								
WSW								
W								
WNW								
NW								
NNW								
	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	2.0	5.1	7.5	10.2	18.4	0.0		0.0
TOTAL	.30	0.10	0.40	0.10	0.10	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION [illegible] DEGREE OF STABILITY

RELATIVE FREQUENCY OF CALM [illegible]

A TOTAL OF [illegible] 5 OBSERVATIONS FROM A SAMPLE OF 15 SOUNDINGS DID NOT HAVE SPEED OR DIRECTION DATA

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5755

DATE 12/01/77 TIME 07:26:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/T STD	U/T NORM	U/T LAPSE	WND SPD M/S	WND DIR DEG
	SFC		-4.97		0.0		1.5	315.
0.5	* 76.	1752.	-2.92		2.68	5.61		
1.0	152.	1828.	-3.59	1.37	-2.10	0.83	0.1	211.
2.0	305.	1981.	-4.76	-1.17	-2.88	0.65	5.2	239.
2.1	324.	2000.	-5.45	-0.19	-2.50	0.43	5.4	245.
3.2	503.	2179.	-6.43	-1.48	-2.12	4.81	5.5	273.
5.8	824.	2500.	-8.09	-2.08	-1.74	1.18	0.6	259.
8.6	1324.	3000.	-12.65	-4.05	-1.37	1.56	4.8	208.
15.1	2324.	4000.	-18.65	-5.50	-2.18	0.75		

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5755

DATE 12/01/77 TIME 07:26:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	1.1	-1.1	1.5	315.
0.5	76.	1752.	1.2	7.0	7.1	190.
1.0	152.	1828.	3.2	5.1	6.0	212.
1.5	229.	1905.	3.6	3.7	5.1	224.
2.0	305.	1981.	4.5	2.5	5.2	240.
2.5	381.	2057.	5.9	1.8	6.2	253.
3.0	463.	2139.	4.9	-0.0	4.9	270.
3.5	539.	2215.	6.2	-0.5	6.2	275.
4.0	615.	2291.	5.8	-1.0	6.0	284.
4.5	692.	2368.	4.9	-0.7	4.9	278.
5.0	768.	2444.	4.5	0.7	4.5	201.
5.5	844.	2520.	4.1	0.9	4.2	258.
6.0	920.	2596.	3.6	1.0	3.8	249.
6.5	996.	2672.	2.7	2.4	3.6	229.
7.0	1073.	2749.	1.7	3.6	4.0	205.
7.5	1149.	2825.	1.4	3.6	3.8	202.
8.0	1225.	2901.	1.3	3.8	4.0	199.
8.5	1312.	2988.	1.6	4.5	4.8	200.
9.0	1388.	3064.	1.8	4.4	4.7	202.
9.5	1464.	3140.	1.5	4.4	4.5	196.
10.0	1540.	3216.	2.3	3.3	4.0	215.
10.5	1617.	3293.	0.5	4.9	4.9	186.
11.0	1693.	3369.	0.5	4.1	4.1	187.
11.5	1769.	3445.	1.1	4.2	4.4	195.
12.0	1845.	3521.	1.7	4.6	4.9	200.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5753

DATE 12/03/77 TIME 08:45:31 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	T/T STD	T/T SOUN	T/T LAPSE	WS M/S	WD DEG
	SFC		11.17		0.0		1.5	359.
0.8	* 414	1790	12.03		0.30	5.29		
1.0	150	1820	12.50	1.58	-1.20	1.50	3.0	190.
2.0	300	1974	11.18	-1.38	-3.03	-0.10	7.1	210.
2.1	524.	2000.	10.54	-0.44	-3.28	-0.35	7.2	217.
3.2	574	2178	9.33	-1.41	-3.48	-0.55	9.7	224.
5.2	824.	2500.	0.58	-2.06	-2.22	0.71	7.4	235.
8.2	1324.	3000.	1.51	-4.92	-5.75	-0.84	5.5	227.
13.8	2324.	4000.	-7.96	-9.54	-4.45	-1.52		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5753

DATE 12/03/77 TIME 08:45:31 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	0.0	-1.5	1.5	359.
0.5	76.	1752.	-0.6	3.8	3.8	171.
1.0	152.	1828.	0.6	3.5	3.6	190.
1.5	229.	1905.	2.7	5.0	0.2	205.
2.0	305.	1981.	4.0	5.9	7.1	214.
2.5	385.	2061.	5.6	5.0	7.5	228.
3.0	465.	2141.	6.7	6.2	9.1	227.
3.5	547.	2223.	8.1	6.8	10.5	230.
4.0	630.	2314.	6.7	5.8	8.9	229.
4.5	723.	2399.	7.3	6.7	9.9	228.
5.0	799.	2475.	5.9	4.3	7.3	234.
5.5	875.	2551.	6.5	3.9	7.5	239.
6.0	952.	2628.	5.9	5.1	7.8	230.
6.5	1035.	2711.	8.0	2.7	8.4	251.
7.0	1134.	2810.	6.7	5.2	8.5	232.
7.5	1219.	2895.	5.1	4.1	6.6	231.
8.0	1298.	2972.	1.7	2.9	3.3	210.
8.5	1381.	3057.	3.8	0.0	3.9	261.
9.0	1470.	3146.	3.6	-0.1	3.6	271.
9.5	1549.	3225.	3.0	-1.0	3.1	289.
10.0	1625.	3301.	2.4	1.7	3.0	234.

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5772

DATE 12/03/77 — TIME 13:32 MST — ASCENT RATE 500 FPM — DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 500M	D/T LAPSE	WS M/S	WD DEG
	SFC		14.83		0.0		1.5	45.
0.2	150	1826	12.84	-1.99	-2.16	0.77	6.5	224.
1.2	360	1976	11.00	-1.18	-3.26	-0.33	8.5	226.
2.0	524.	2000.	10.71	-0.44	-4.36	-1.44	8.3	229.
2.2	560	2176	9.45	-1.77	-4.56	-1.66	10.0	230.
4.4	824.	2500.	6.43	-3.01	-4.44	-1.51	11.4	235.
7.2	1324.	3000.	1.98	-3.80	-2.81	0.11	14.2	245.
13.3	2324.	4000.	-4.84	-7.40	-5.18	-2.25		
18.1	3324.	5000.	-14.23	-9.20	-5.53	-3.66		

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5772

DATE 12/03/77 — TIME 13:32 MST — ASCENT RATE 500 FPM — DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	1676.	-1.1	-1.1	1.5	45.
0.5	76.	1752.	2.8	2.8	3.8	225.
1.0	164.	1840.	4.9	5.1	7.0	224.
1.5	241.	1917.	5.8	5.8	8.1	226.
2.0	317.	1993.	6.3	6.5	8.3	229.
2.5	404.	2080.	5.9	6.2	7.9	229.
3.0	518.	2194.	8.7	7.2	11.3	230.
3.5	654.	2330.	10.0	7.7	12.8	232.
4.0	739.	2415.	8.1	6.2	10.2	233.
4.5	844.	2520.	8.8	6.7	11.7	233.
5.0	957.	2633.	9.5	7.1	11.9	233.
5.5	1063.	2739.	10.3	7.8	13.3	235.
6.0	1139.	2815.	9.0	6.7	11.7	235.
6.5	1215.	2891.	11.5	8.4	14.8	234.
7.0	1292.	2968.	12.1	8.5	14.7	234.
7.5	1368.	3044.	13.3	9.5	16.4	234.
8.0	1444.	3120.	13.2	7.9	17.1	242.
8.5	1520.	3196.	12.1	7.9	16.9	235.
9.0	1596.	3272.	14.5	8.7	16.9	240.
9.5	1673.	3349.	11.3	8.7	14.3	234.
10.0	1749.	3425.	11.7	7.2	13.7	239.
10.5	1825.	3501.	2.5	2.2	3.3	251.
11.0	1901.	3577.	6.2	-1.2	6.3	281.
11.5	1977.	3653.	7.0	-0.9	7.0	270.
12.1	2054.	3730.	6.3	-2.5	6.8	292.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5750

DATE 12/05/77 TIME 14:04MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
SFC			9.52		0.4		14.5	2.
0.5	150	1826	7.09	-2.23	-4.79	-1.87	15.8	265.
1.0	300	1976	5.79	-1.30	-4.63	-1.70	19.5	264.
1.5	324.	2000.	4.60	-0.60	-4.09	-1.16	20.1	264.
2.0	500	2176	3.70	-1.49	-5.36	-0.43	19.3	261.
2.5	824.	2500.	0.64	-3.06	-2.83	0.14	18.4	259.
3.0	1324.	3000.	-5.99	-4.63	-4.21	-1.28	17.9	262.
12.0	2324.	4000.	-12.64	-8.65	-3.92	-0.09		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5750

DATE 12/05/77 TIME 14:04MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	-14.3	-0.3	14.3	2.
0.5	76.	1752.	13.8	1.3	13.8	265.
1.0	191.	1867.	18.8	1.8	18.8	265.
1.5	314.	1990.	19.6	2.3	19.7	264.
2.0	415.	2092.	22.9	2.3	23.1	265.
2.5	508.	2184.	18.7	3.1	18.9	261.
3.0	598.	2274.	14.4	4.1	14.9	257.
3.5	675.	2351.	15.0	1.8	15.1	263.
4.0	758.	2434.	16.2	4.5	17.2	255.
4.5	839.	2515.	18.4	3.3	18.7	260.
5.0	915.	2591.	20.1	3.4	20.4	260.
5.5	992.	2668.	16.9	4.0	17.4	257.
6.0	1073.	2749.	16.0	3.7	16.4	257.
6.5	1152.	2828.	15.7	2.6	15.9	261.
7.0	1234.	2910.	16.3	2.3	16.4	262.
7.5	1338.	3014.	18.0	2.5	18.1	262.
8.0	1452.	3128.	19.5	2.7	19.7	262.
8.5	1560.	3236.	17.8	2.3	17.9	263.
9.0	1682.	3358.	17.0	2.1	17.1	263.
9.5	1807.	3483.	16.8	2.1	17.0	263.
10.0	1887.	3563.	14.8	2.3	15.0	261.
10.5	1964.	3640.	10.5	1.6	10.6	261.
11.0	2040.	3716.	13.1	2.2	13.4	259.
11.5	2116.	3792.	10.2	0.3	10.3	269.
12.0	2192.	3868.	10.3	-1.2	10.3	277.

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5752

DATE 12/07/77 — TIME 14:01MST — ASCENT RATE 500 FPM — DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		15.92		0.0		2.6	45.
1.0	150.	1826.	12.37	-1.55	-1.44	-1.49	7.2	243.
1.9	324.	2000.	10.25	-2.05	-5.45	-2.52	10.0	240.
1.8	300	1976	10.39	0.06	-5.45	-2.52	9.9	241.
2.0	500	2176	8.10	-1.92	-1.83	1.10	12.9	237.
3.3	* 621	2297	7.83		-0.37	3.29		
4.3	* 773	2449	5.80		-3.13	-0.20		
4.5	824.	2500.	5.58	-1.67	-7.21	-4.28	12.6	253.
8.6	1524.	3200.	2.65	-4.06	-1.87	1.06	15.2	227.
13.1	2324.	4000.	-2.53	-5.80	-5.16	-2.23		
17.6	3324.	5000.	-12.94	-10.12	-1.90	0.97		
24.2	4324.	6000.	-14.34	-1.46	-1.37	1.55		

UTAH UAUB — ELEV 1676 METERS — SOUNDING ID 5752

DATE 12/07/77 — TIME 14:01MST — ASCENT RATE 500 FPM — DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	-1.8	-1.8	2.6	45.
0.5	76.	1752.	4.7	2.4	5.3	242.
1.0	153.	1829.	7.1	3.7	8.0	243.
1.5	229.	1905.	6.8	3.7	7.8	242.
2.0	351.	2027.	9.8	5.7	11.4	240.
2.5	490.	2166.	11.2	7.1	13.3	238.
3.0	583.	2259.	7.5	5.6	9.3	235.
3.5	659.	2335.	7.6	5.4	9.3	235.
4.0	736.	2412.	7.0	5.9	9.6	232.
4.5	813.	2489.	9.8	7.5	12.3	233.
5.0	991.	2667.	13.0	10.1	17.0	235.
5.5	1153.	2829.	12.3	9.4	15.4	233.
6.0	1236.	2912.	12.1	5.7	15.3	245.
6.5	1313.	2989.	11.0	10.9	15.5	225.
7.0	1389.	3065.	11.2	7.7	13.6	233.
7.5	1465.	3141.	13.1	8.6	15.7	237.
8.0	1541.	3217.	4.1	22.8	23.2	190.
8.5	1617.	3293.	22.2	-0.0	23.1	287.
9.0	1694.	3370.	10.7	7.2	12.9	236.
9.5	1770.	3446.	10.3	8.4	13.3	231.
10.0	1846.	3522.	9.0	10.2	13.6	223.
10.5	1922.	3598.	8.6	8.8	12.3	225.
11.0	1998.	3674.	7.5	7.1	10.4	227.
11.5	2075.	3751.	9.2	4.8	10.4	242.

UTAH NAUM ELEV 1676 METERS SOUNDING ID 5753

DATE 12/11/77 TIME OBSERVED ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 500M	D/T LAPSE	S M/S	DIR DEG
	SFC		-4.92		0.0		-1.0	0.
1.0	150	1826	-8.20	-3.28	-5.52	-8.25	M	M
2.0	500	1976	11.48	-3.78	-5.03	-8.50	"	"
2.1	324.	2000.	12.18	-0.20	-4.71	-7.63	"	"
3.0	* 457	2133	13.21		-3.50	-5.29		
3.3	500	2176	12.57	-0.49	-1.82	-1.31	"	"
5.0	824.	2500.	10.02	-1.55	-1.09	-1.04	"	"
8.7	1324.	3000.	8.32	-1.33	-0.73	-2.20	"	"
14.9	2324.	4000.	1.79	-1.53	-2.82	-4.11		
24.5	3324.	5000.	-8.14	-9.93	-3.29	-4.35		
26.0	4524.	6000.	-17.30	-7.25	-2.37	-8.55		

UTAH NAUM ELEV 1676 METERS SOUNDING ID 5753

DATE 12/11/77 TIME OBSERVED ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
1.0	0.	1676.	-1.0	-0.0	1.0	90.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5751

DATE 12/13/77 TIME 07:31MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T SOND	D/T LAPSE	WS M/S	WD DEG
	SFC		-5.94		0.0		2.6	310.
1.0	152	1828	-0.82	4.41	-0.57	3.59	3.4	183.
1.0	* 152	1828	0.63		0.57	3.59		
2.0	305	1976	-0.80	-1.62	-0.76	2.17	2.7	254.
2.1	324.	2000.	-0.92	-1.49	-0.57	2.30	2.9	240.
3.3	500.	2176.	-1.18	-0.30	-0.95	1.98	4.5	259.
5.4	824.	2500.	-2.54	-1.35	-2.80	0.07	5.8	241.
7.5	*1171	2847	-5.75		1.22	4.84		
8.3	*1285	2961	-5.99		1.22	4.95		
8.5	1324.	3000.	-6.77	-1.94	-1.92	1.01	11.7	202.
10.5	*1552	3228	-5.75		0.0	2.93		
11.3	*1742	3418	-4.19		-0.38	2.54		
15.4	2324.	4000.	-8.22	-3.42	-0.56	2.55		
21.3	3324.	5000.	-16.74	-8.44	-5.16	-0.23		
27.5	4324.	6000.	-24.65	-7.89	-4.01	-1.88		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5751

DATE 12/13/77 TIME 07:31MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	1676.	1.8	-1.8	2.6	315.
0.5	76.	1752.	-1.5	2.1	2.6	127.
1.0	152.	1828.	0.3	3.4	3.5	184.
1.5	229.	1905.	1.6	2.5	3.0	210.
2.0	307.	1983.	2.3	1.3	2.7	242.
2.5	384.	2060.	3.0	1.0	3.7	255.
3.0	460.	2136.	5.4	0.1	5.4	269.
3.5	536.	2212.	3.5	1.2	3.7	251.
4.0	612.	2288.	2.5	2.8	3.7	222.
4.5	688.	2364.	3.3	2.0	3.8	239.
5.0	765.	2441.	2.7	4.8	5.1	237.
5.5	841.	2517.	5.3	2.8	6.0	242.
6.0	917.	2593.	7.1	3.9	8.1	241.
6.5	1015.	2691.	8.3	3.5	9.0	247.
7.0	1095.	2771.	8.7	3.2	9.2	250.
7.5	1171.	2847.	10.7	2.8	11.1	255.
8.0	1248.	2924.	11.2	2.3	11.4	258.
8.5	1324.	3000.	11.3	1.7	11.7	262.
9.0	1400.	3076.	11.4	1.3	11.5	263.
9.5	1476.	3152.	11.3	1.2	11.4	264.
10.0	1552.	3228.	11.4	-0.4	11.4	272.
10.5	1629.	3305.	11.2	-0.2	11.2	271.
11.0	1705.	3381.	12.5	0.3	12.5	269.
11.5	1781.	3457.	11.4	0.4	11.5	272.
12.0	1857.	3533.	10.1	-0.9	10.4	275.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5778

DATE 12/13/77 TIME 14:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 500M	D/T LAPSE	WS M/S	WD DEG
	SFC		8.39		0.0		1.5	135.
0.9	156	1832	6.47	-1.93	-4.06	-1.15	1.4	345.
1.7	300	1976	5.40	-1.06	-1.80	1.07	0.7	225.
1.8	324.	2000.	5.11	-0.27	-1.46	1.07	0.9	129.
5.0	500	2176	4.17	-0.97	-1.49	1.44	2.4	135.
5.1	824.	2500.	2.08	-1.89	-1.48	1.05	5.6	200.
8.3	1324.	3000.	-1.20	-3.55	-2.20	0.65	9.2	255.
9.0	*1428	3104	-1.76		0.58	3.31		
14.9	2324.	4000.	-3.70	-2.42	-1.54	1.59		
21.4	3324.	5000.	-10.07	-6.37	-2.72	0.20		
27.3	4324.	6000.	-18.85	-8.79	-2.78	0.15		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5778

DATE 12/13/77 TIME 14:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	-1.1	1.1	1.5	135.
0.5	76.	1752.	0.6	-1.3	1.7	335.
1.0	162.	1838.	0.3	-1.3	1.3	346.
1.5	275.	1951.	0.4	-0.5	0.6	324.
2.0	352.	2028.	-0.3	-1.1	1.1	19.
2.5	428.	2104.	-2.5	0.7	2.6	105.
3.0	504.	2180.	-1.3	2.0	2.3	147.
3.5	580.	2256.	-0.5	1.9	1.9	164.
4.0	656.	2332.	0.6	5.1	5.2	187.
4.5	733.	2409.	0.0	4.9	4.9	181.
5.0	809.	2485.	1.7	5.3	5.6	198.
5.5	885.	2561.	2.6	4.8	5.5	208.
6.0	961.	2637.	4.9	4.9	6.7	220.
6.5	1037.	2713.	5.5	5.2	7.6	226.
7.0	1114.	2790.	8.5	5.3	8.4	231.
7.5	1190.	2866.	9.9	4.5	8.3	257.
8.0	1276.	2952.	7.8	3.7	8.6	245.
8.5	1352.	3028.	9.5	1.4	9.5	261.
9.0	1429.	3105.	12.1	-1.8	12.3	278.
9.5	1505.	3181.	13.5	1.1	13.5	295.
10.0	1581.	3257.	10.9	-0.3	10.9	272.
10.5	1657.	3333.	9.9	0.2	9.9	269.
11.0	1733.	3409.	8.8	-0.5	8.8	274.
11.5	1810.	3486.	6.8	-2.7	7.3	291.
12.0	1886.	3562.	6.3	-3.5	7.1	298.

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5709

DATE 12/15/77 TIME 07:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 500M	D/T LAPSE	WS M/S	WD DEG
	SFC		8.00		0.0		1.5	45.
0.9	150.	1820.	7.01	-1.85	-2.21	0.71	7.7	202.
1.9	300.	1970.	5.87	-1.14	-1.85	1.08	11.1	197.
2.1	324.	2000.	5.39	-0.18	-2.41	0.52	11.9	198.
3.2	500.	2176.	4.45	-1.24	-2.05	0.88	13.4	198.
5.4	824.	2500.	1.98	-2.47	-1.31	1.61	12.8	209.
8.0	1324.	75000.	0.36	-1.63	-0.94	1.98	21.5	229.
14.3	2324.	4000.	-8.68	-9.03	-2.91	0.02		
21.8	3324.	5000.	-18.34	-7.66	-1.97	0.95		
27.3	4324.	6000.	-24.12	-7.78	-2.00	0.93		

UTAH UAUB ELEV 1070 METERS SOUNDING ID 5709

DATE 12/15/77 TIME 07:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1070.	-1.1	-1.1	1.5	45.
0.5	76.	1752.	1.5	3.0	3.3	206.
1.0	151.	1837.	3.1	7.0	8.4	202.
1.5	237.	1913.	2.5	9.0	9.4	196.
2.0	313.	1989.	3.5	11.0	11.5	198.
2.5	394.	2066.	4.1	13.7	14.3	197.
3.0	469.	2142.	4.0	12.9	13.2	197.
3.5	542.	2218.	4.1	12.9	13.5	198.
4.0	618.	2294.	4.6	13.6	14.3	199.
4.5	694.	2370.	4.5	13.3	14.0	199.
5.0	771.	2447.	4.4	11.2	12.2	201.
5.5	847.	2523.	4.2	10.9	12.0	210.
6.0	923.	2599.	3.3	11.7	12.9	224.
6.5	999.	2675.	2.6	13.7	15.7	243.
7.0	1075.	2751.	1.2	17.2	17.1	221.
7.5	1152.	2828.	1.9	15.5	16.6	226.
8.0	1225.	2904.	1.5	12.7	19.3	229.
8.5	1309.	2980.	1.5	15.0	22.2	228.
9.0	1381.	3056.	1.8	11.4	19.5	254.
9.5	1456.	3132.	1.2	11.7	20.6	234.
10.0	1533.	3209.	1.4	10.4	19.6	223.
10.5	1609.	3285.	1.7	7.2	21.8	251.
11.0	1723.	3399.	1.5	12.4	22.3	230.
11.5	1800.	3476.	1.2	10.6	18.6	235.
12.0	1885.	3561.	1.8	6.0	18.8	251.

UTAH UAUA ELEV 1676 METERS SOUNDING ID 5768

DATE 12/15/77 TIME 14:11MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		9.32		0.0		2.6	45.
1.0	? 150	1826	7.94	-1.49	-2.20	0.72	5.4	142.
2.0	? 300	1976	6.72	-1.21	-2.21	0.71	7.2	132.
2.1	324.	?2000.	6.53	-0.19	-2.22	0.71	7.4	192.
3.3	500	2176	4.87	-1.67	-2.60	0.35	7.0	189.
5.4	824.	2500.	3.22	-1.64	-2.24	-0.68	13.4	184.
8.5	1324.	3000.	-1.57	-4.30	-3.80	-0.87	15.0	211.
10.4	2324.	4000.	-10.07	-8.99	-3.89	-0.96		
24.0	3324.	5000.	-16.04	-5.97	-2.57	-0.36		

UTAH UAUA ELEV 1676 METERS SOUNDING ID 5768

DATE 12/15/77 TIME 14:11MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	1676.	-1.8	-1.8	2.6	45.
0.5	76.	1752.	0.3	3.9	3.9	184.
1.0	152.	1828.	0.1	5.9	5.9	181.
1.5	229.	1905.	1.2	0.5	0.9	191.
2.0	305.	1981.	1.5	7.1	7.3	192.
2.5	381.	2057.	1.6	7.4	7.5	192.
3.0	457.	2133.	0.9	7.1	7.2	187.
3.5	535.	2211.	0.6	6.8	6.8	185.
4.0	612.	2288.	1.6	6.8	7.0	193.
4.5	688.	2364.	-0.3	8.8	8.8	178.
5.0	764.	2440.	0.2	11.7	11.7	181.
5.5	840.	2516.	1.2	13.8	13.9	185.
6.0	916.	2592.	1.6	11.8	11.9	188.
6.5	993.	2669.	1.4	11.7	11.8	187.
7.0	1069.	2745.	2.1	7.4	7.7	195.
7.5	1145.	2821.	2.5	9.6	10.0	195.
8.0	1229.	2905.	5.7	13.0	14.2	204.
8.5	1316.	2994.	7.5	15.9	15.0	21 .
9.0	1399.	3075.	8.7	12.4	15.2	215.
9.5	1485.	3164.	8.8	10.1	13.4	221.

UIAM UAUA ELEV 1676 METERS SOUNDING ID 5704

DATE 12/19/77 TIME 07:01:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
SFC			-4.30		-1.0		1.5	315.
1.1	150.	1826.	-6.45	-1.65	-6.00	1.07	M	M
1.5	* 194	1870	-0.43		1.54	4.47		
1.9	300	1976	-4.59	1.44	2.50	5.42	M	M
2.4	* 364	1945	-1.58		2.54	5.42		
2.1	324.	2000.	-4.67	-0.42	0.0	2.93	M	M
3.3	500	2176	-5.03	-0.77	-1.35	1.58	M	M
5.0	824.	2500.	-8.06	-3.03	-3.68	-0.76	M	M
7.5	1324.	3000.	-13.55	-4.97	-2.74	0.18	M	M
12.2	2324.	4000.	-23.41	-9.77	-5.20	-2.27		

UIAM UAUA ELEV 1676 METERS SOUNDING ID 5704

DATE 12/19/77 TIME 07:01:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	1.1	-1.1	1.5	315.

UTAH DAUB — ELEV 1676 METERS — SOUNDING ID 576A

DATE 12/19/77 TIME 14:11 MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		2.74		0.0		1.5	180.
0.5	150.	1826.	-0.28	-2.46	-0.73	-1.80	3.0	324.
1.0	324.	2000.	-1.70	-1.53	-1.53	1.00	3.9	309.
1.5	500	1976	-1.86	-0.31	-1.53	1.60	3.9	310.
2.7	566	2176	-2.05	-0.19	-1.94	1.02	1.8	254.
4.8	824.	2500.	-3.89	-1.84	-1.34	1.59	*	*
7.7	1324.	3000.	-7.98	-4.01	-3.09	-0.17		
8.3	*1401	3077	-8.59		-0.58	2.35		
10.3	*1700	3342	-7.12		0.0	-2.93		
14.3	2324.	4000.	-12.05	-4.15	-2.35	0.58		
20.0	3324.	5000.	-18.75	-6.71	-1.79	1.14		

UTAH DAUB — ELEV 1676 METERS — SOUNDING ID 576A

DATE 12/19/77 TIME 14:11MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	-0.0	1.5	1.5	180.
0.5	76.	1752.	0.7	-1.7	1.8	337.
1.0	191.	1867.	2.5	-2.7	3.7	316.
1.5	299.	1975.	3.0	-2.5	3.9	310.
2.0	400.	2076.	3.2	-2.1	3.9	303.
2.5	476.	2152.	1.5	-0.0	1.5	271.
3.0	553.	2229.	1.4	1.9	2.4	217.

UTAH DAUB ELEV 1670 METERS SOUNDING ID 5762

DATE 12/29/77 TIME 1811GMT ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

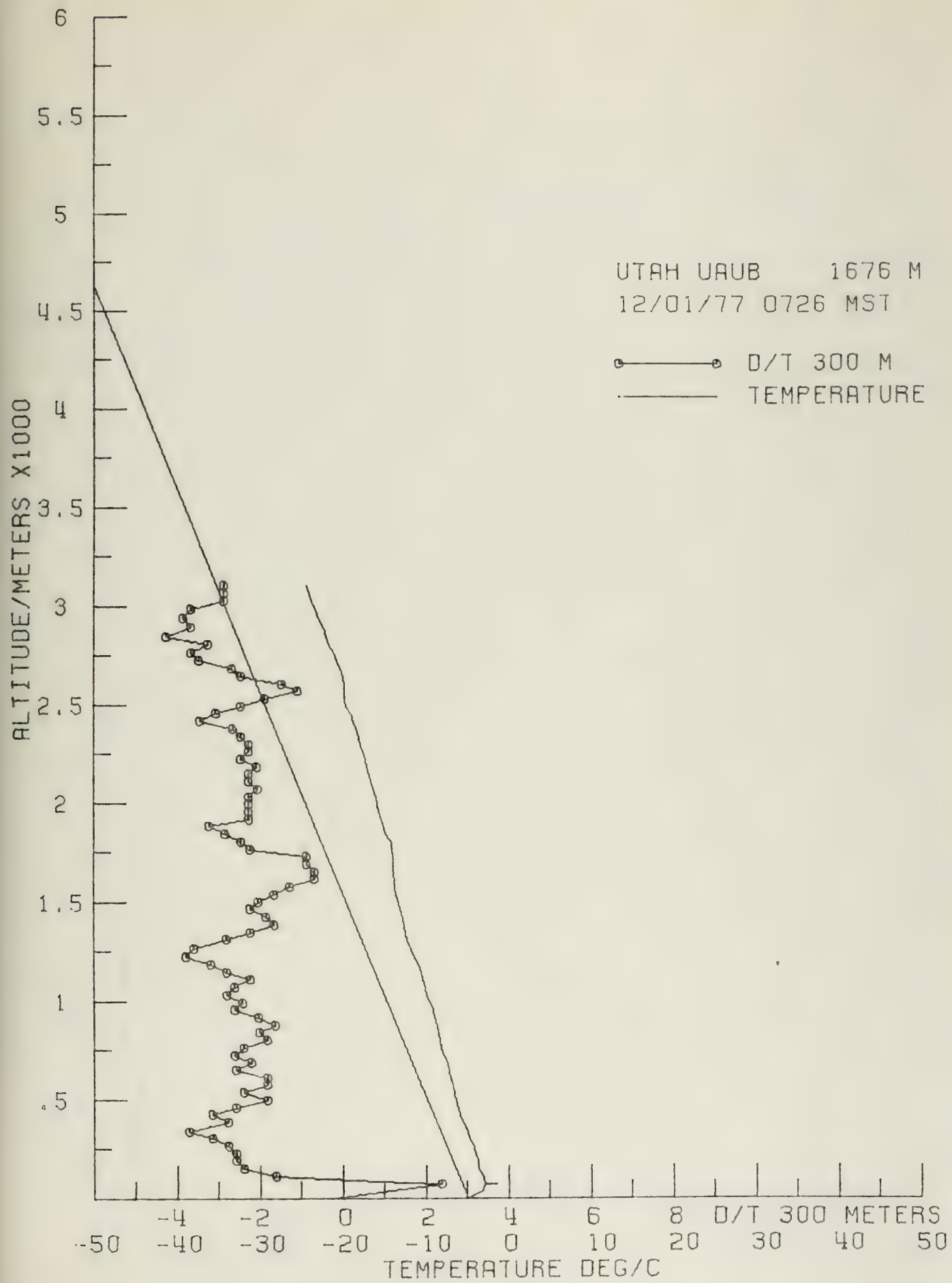
TIME M	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		5.58		-1.0			
0.7	150	1820	1.68	-3.90	-3.00	-3.08		
1.0	* 230	1900	0.95		-2.56	3.49		
1.5	300	1970	2.24	0.56	4.32	7.25		
1.9	624.	2000.	3.16	-0.92	3.57	6.49		
1.8	* 340	2020	3.22		3.57	6.49		
2.2	500	2170	2.30	-0.62	0.1	2.93		
4.9	824.	2500.	1.79	-1.05	-0.94	1.99	M	M
8.1	1324.	3000.	-1.09	-2.88	-1.71	1.22	M	M
14.6	2324.	4000.	-8.87	-7.80	-1.94	0.99		
21.2	3324.	5000.	-15.34	-7.65	-1.97	0.95		
28.5	4324.	6000.	-25.45	-9.11	-5.42	-2.49		

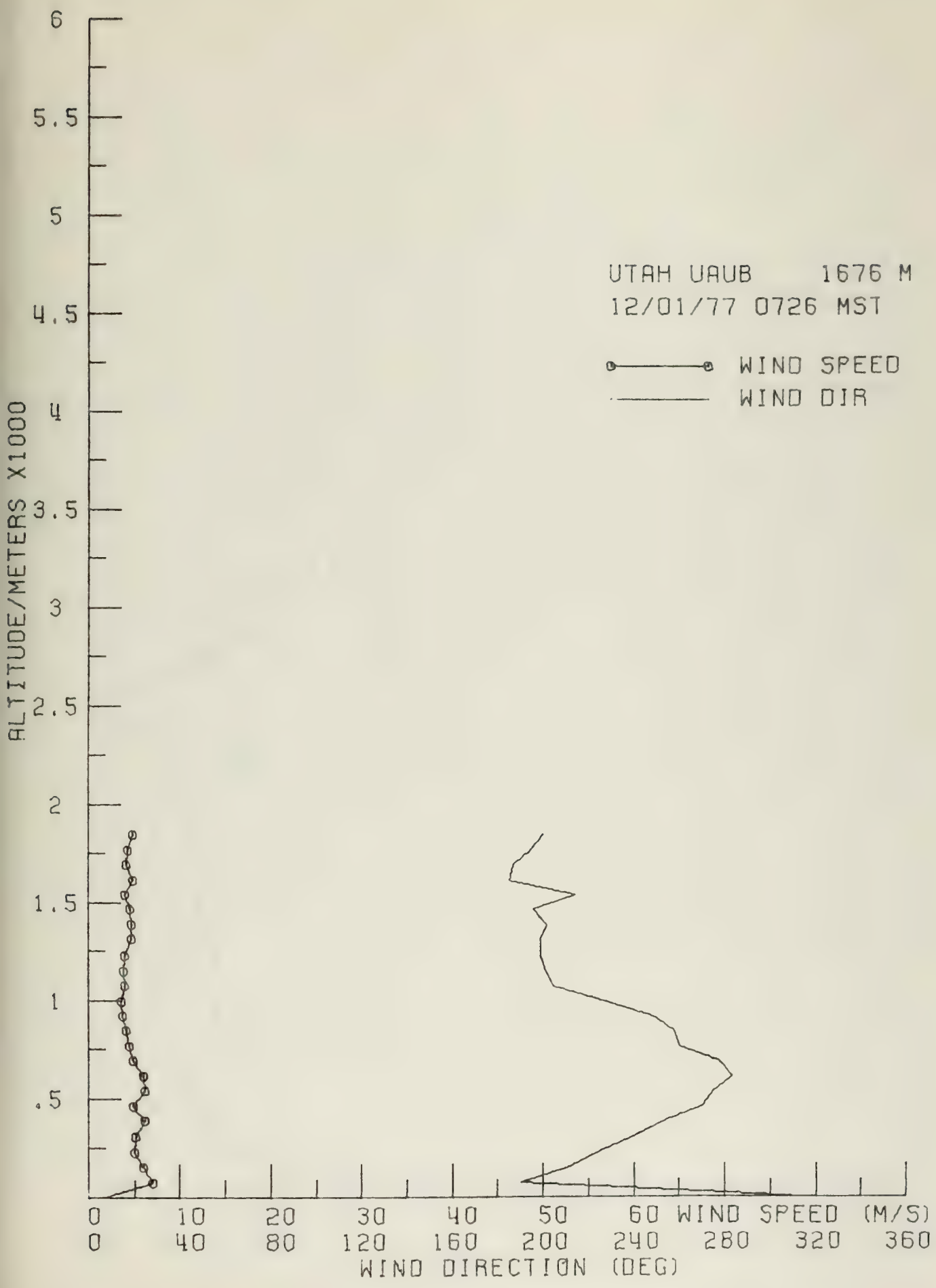
UTAH DAUB ELEV 1670 METERS SOUNDING ID 5762

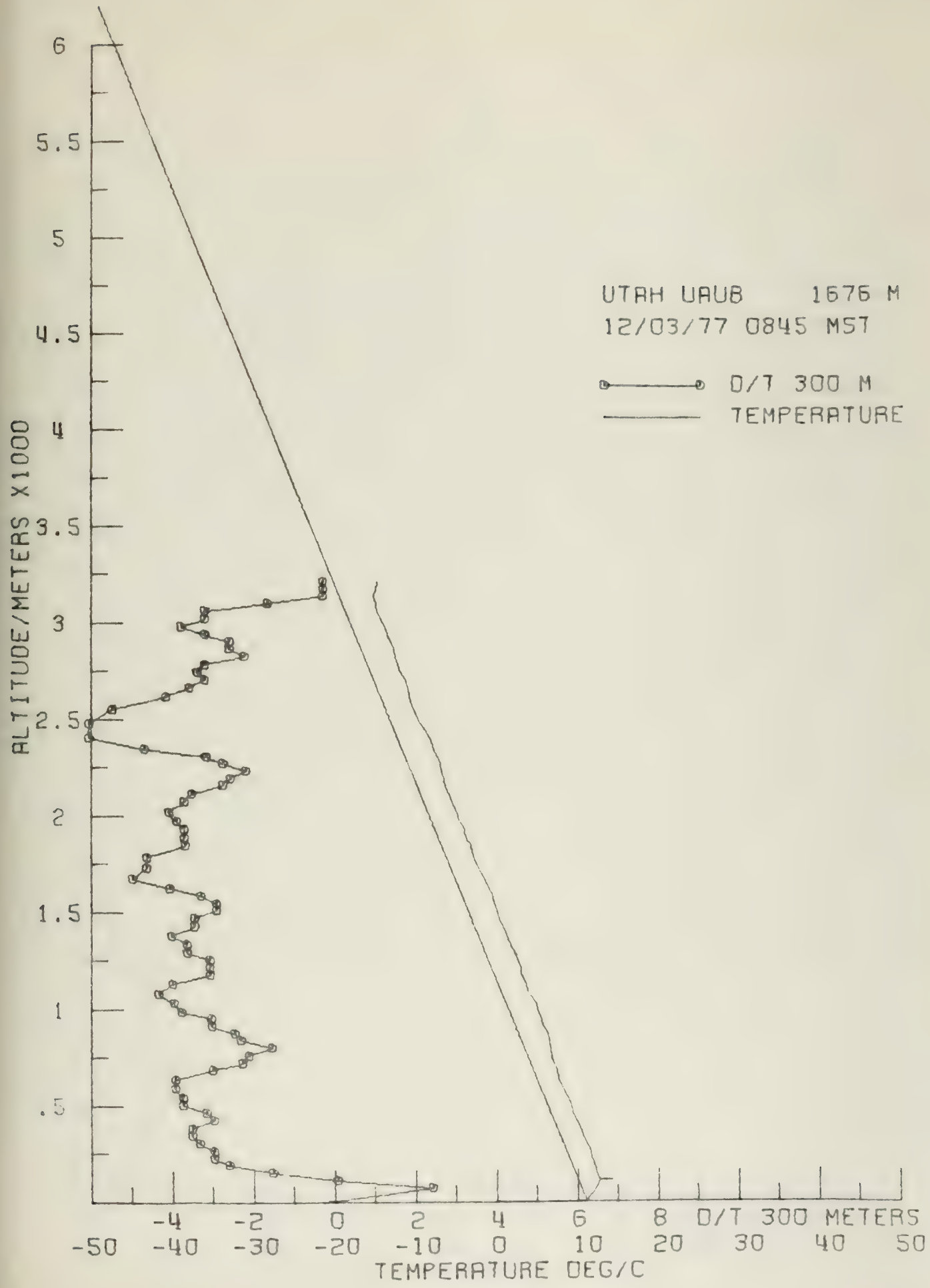
DATE 12/29/77 TIME 1811GMT ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

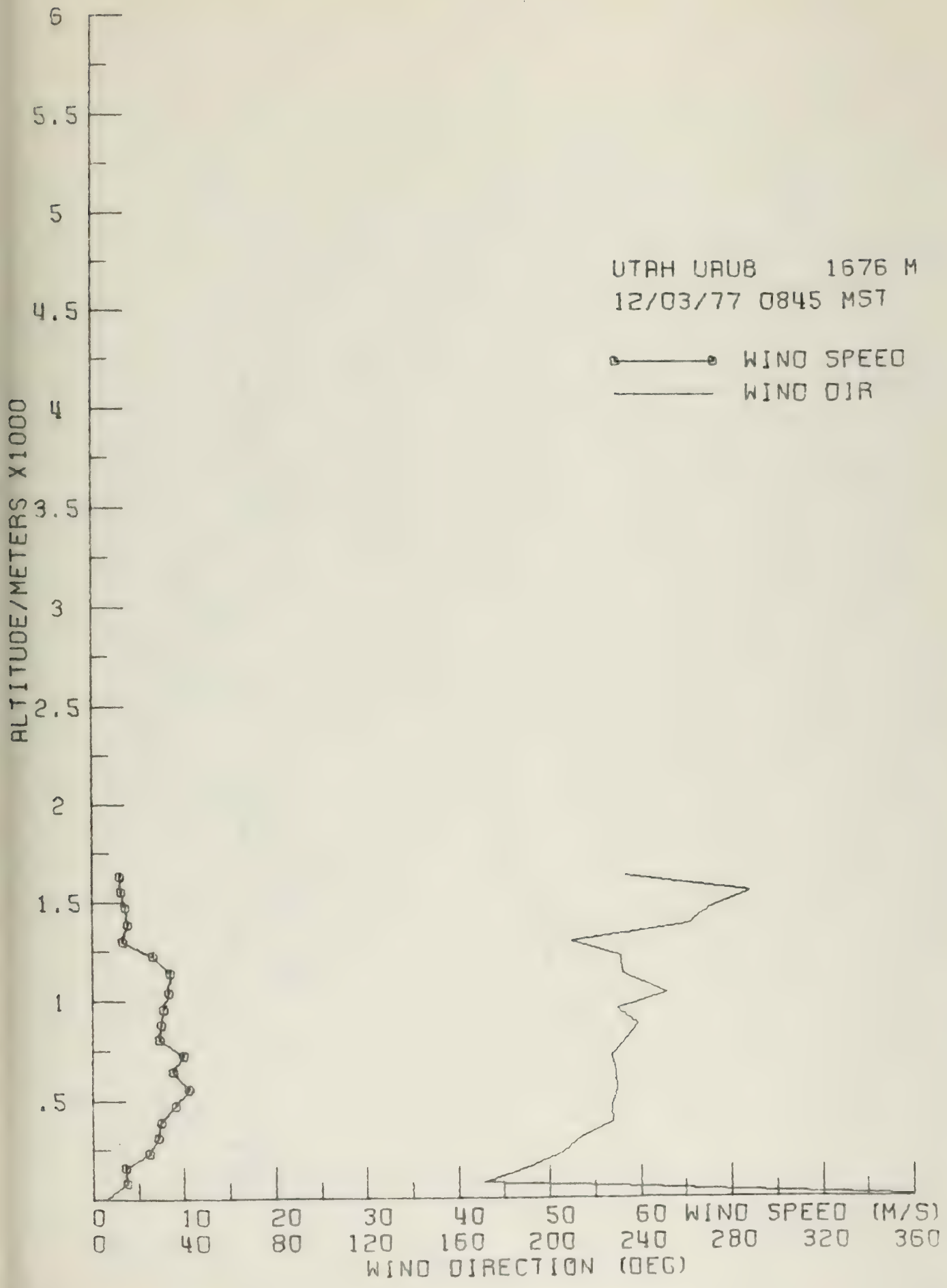
TIME M	HEIGHT (AGL)	HEIGHT (MSL)	U-COMP /S	V-COMP /S	WIND SPEED /S	WIND DIR DEG

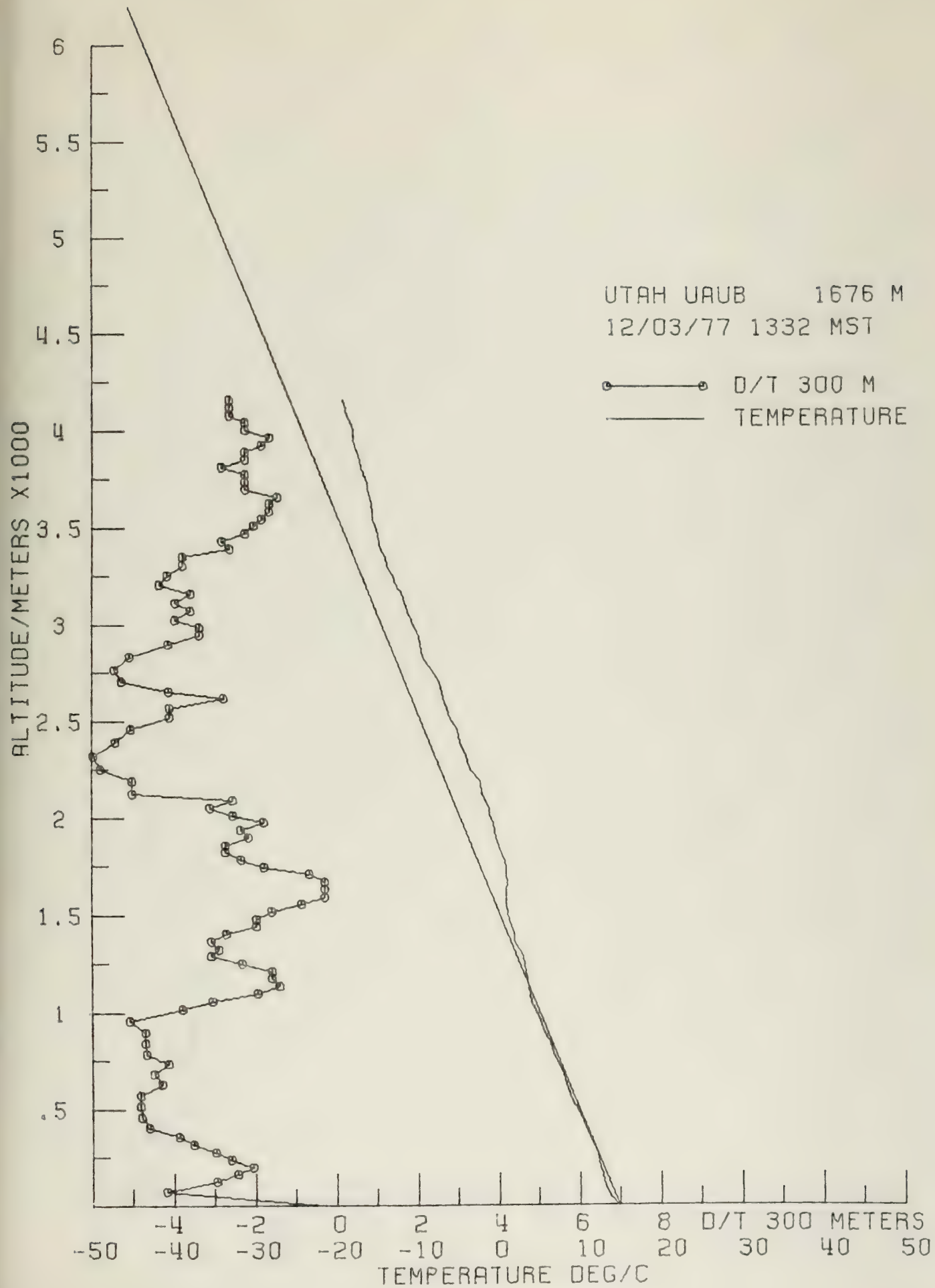
THE WIND DATA ARE MISSING

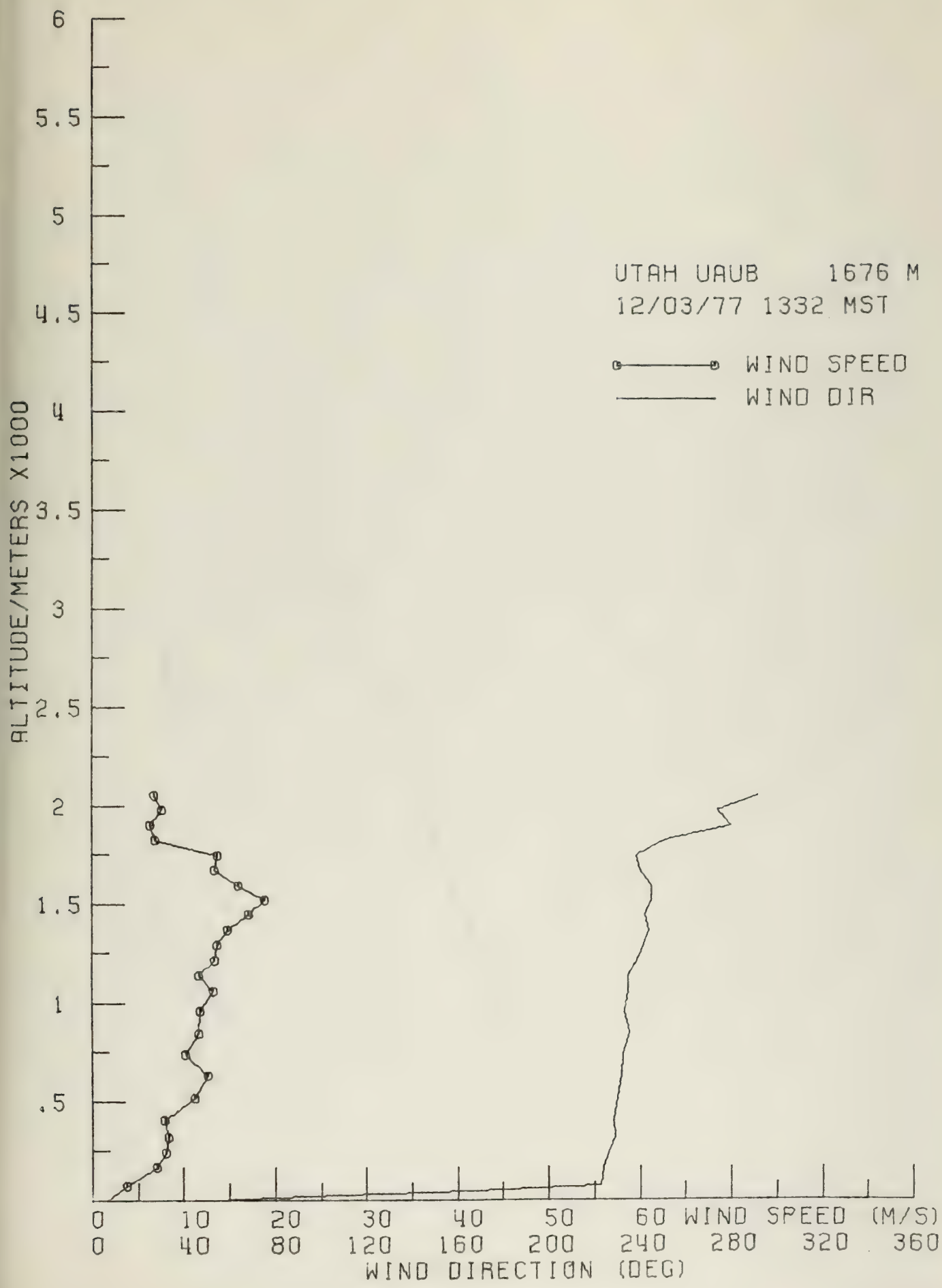

UTAH UAUB 1676 M
12/01/77 0726 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C

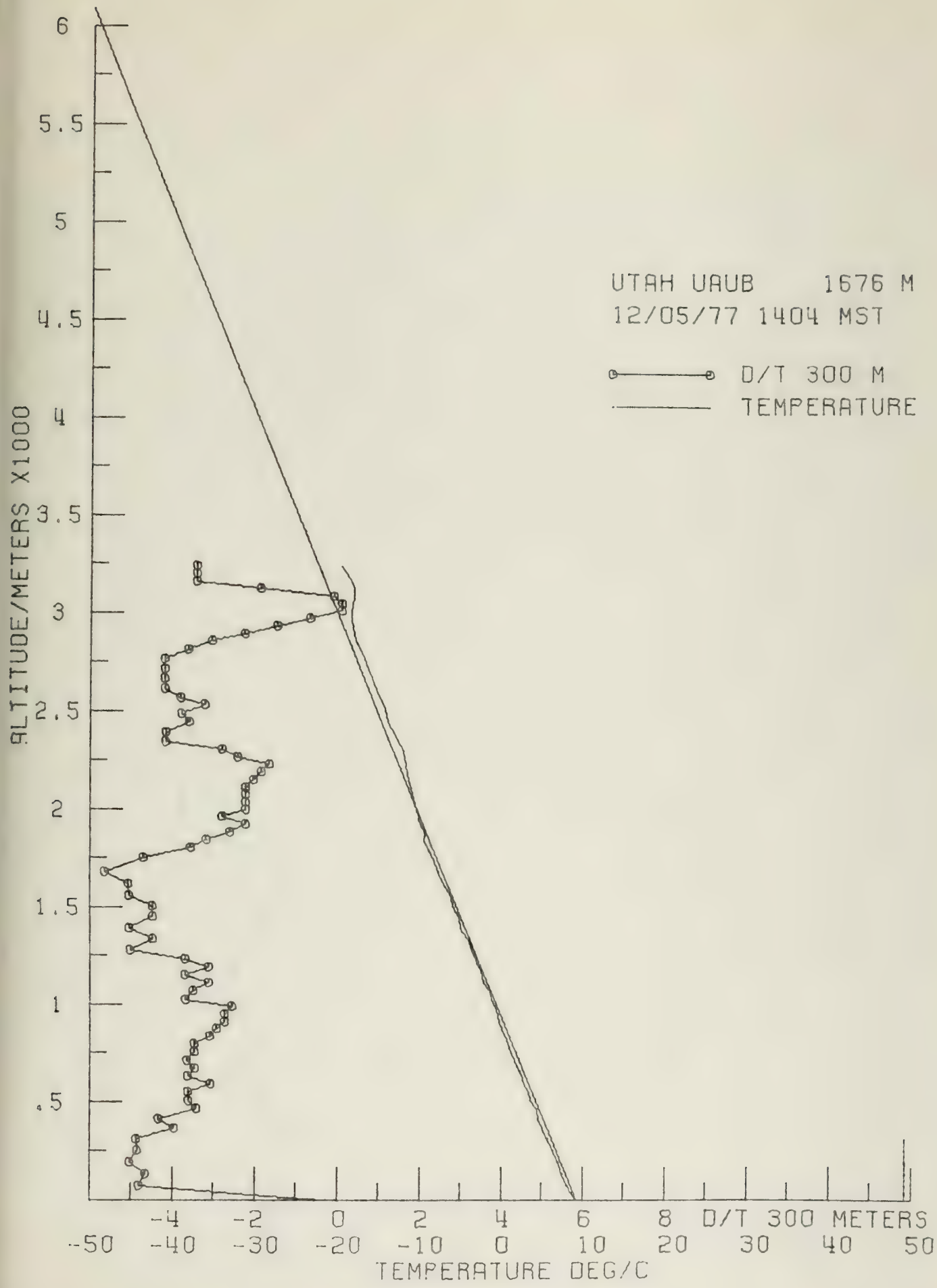

UTAH UAUB 1676 M
12/01/77 0726 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

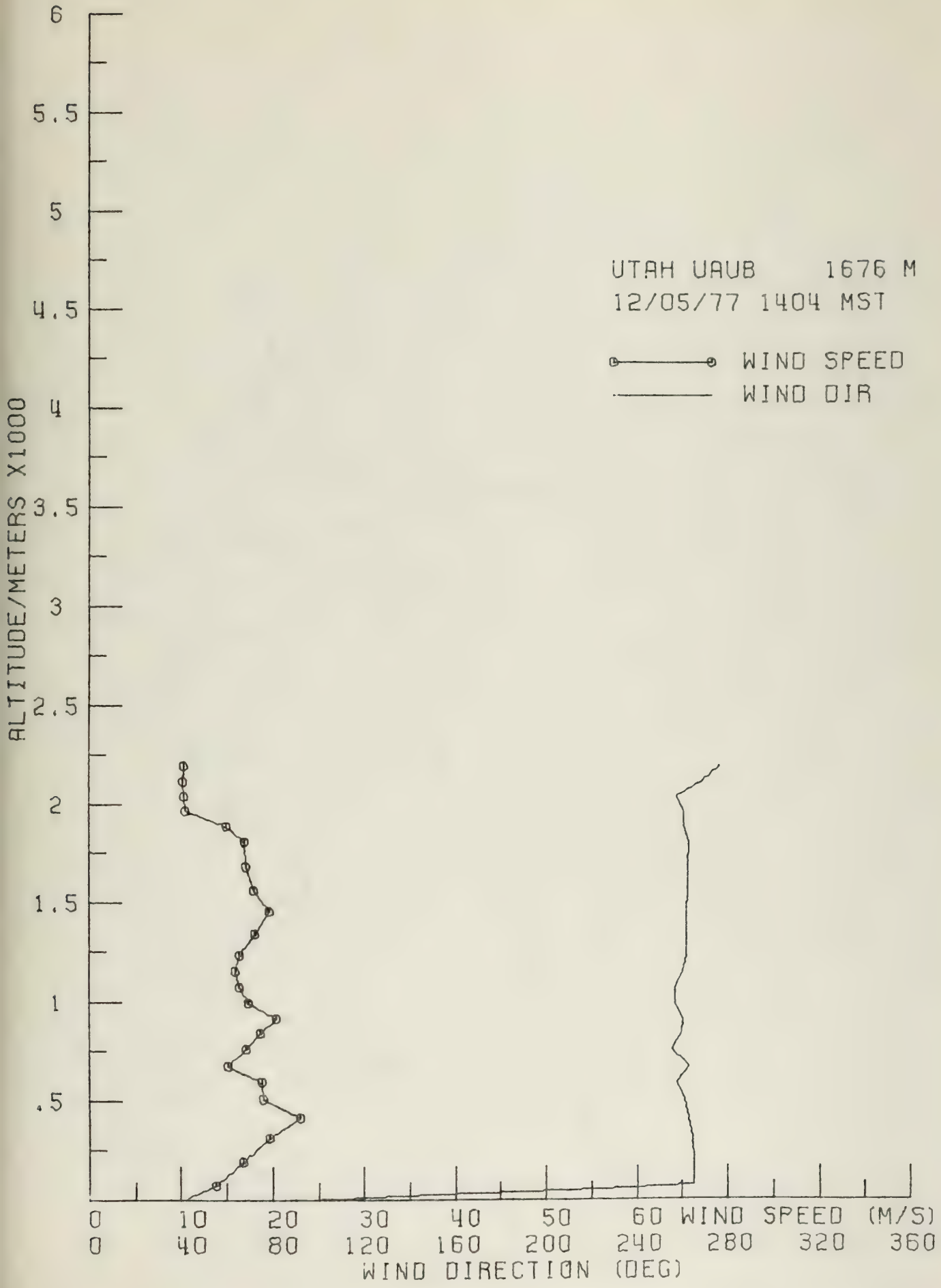

UTAH UAUB 1676 M
12/03/77 0845 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C

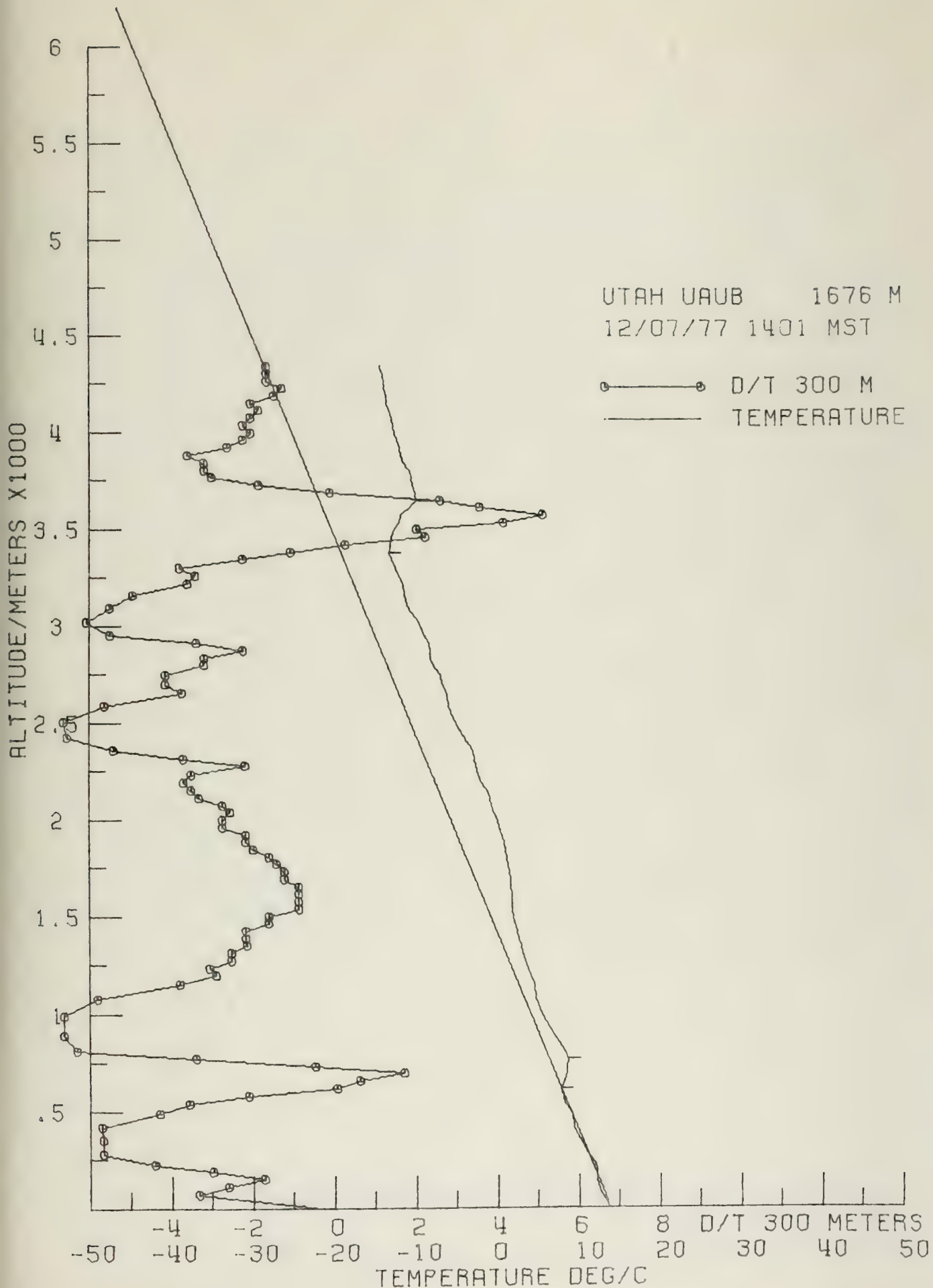

UTAH UAU8 1676 M
12/03/77 0845 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

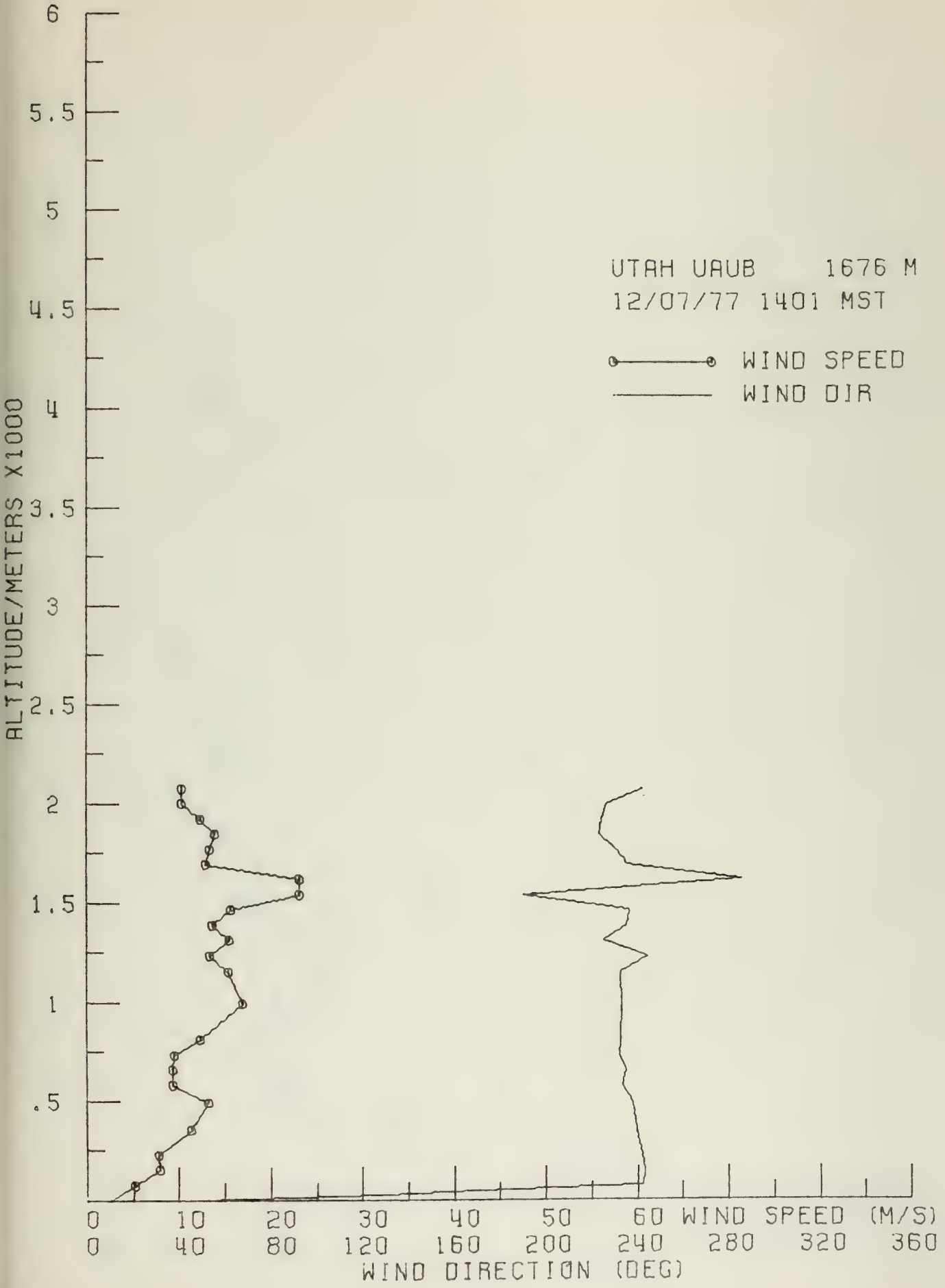

UTAH UAUB 1676 M
12/03/77 1332 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C

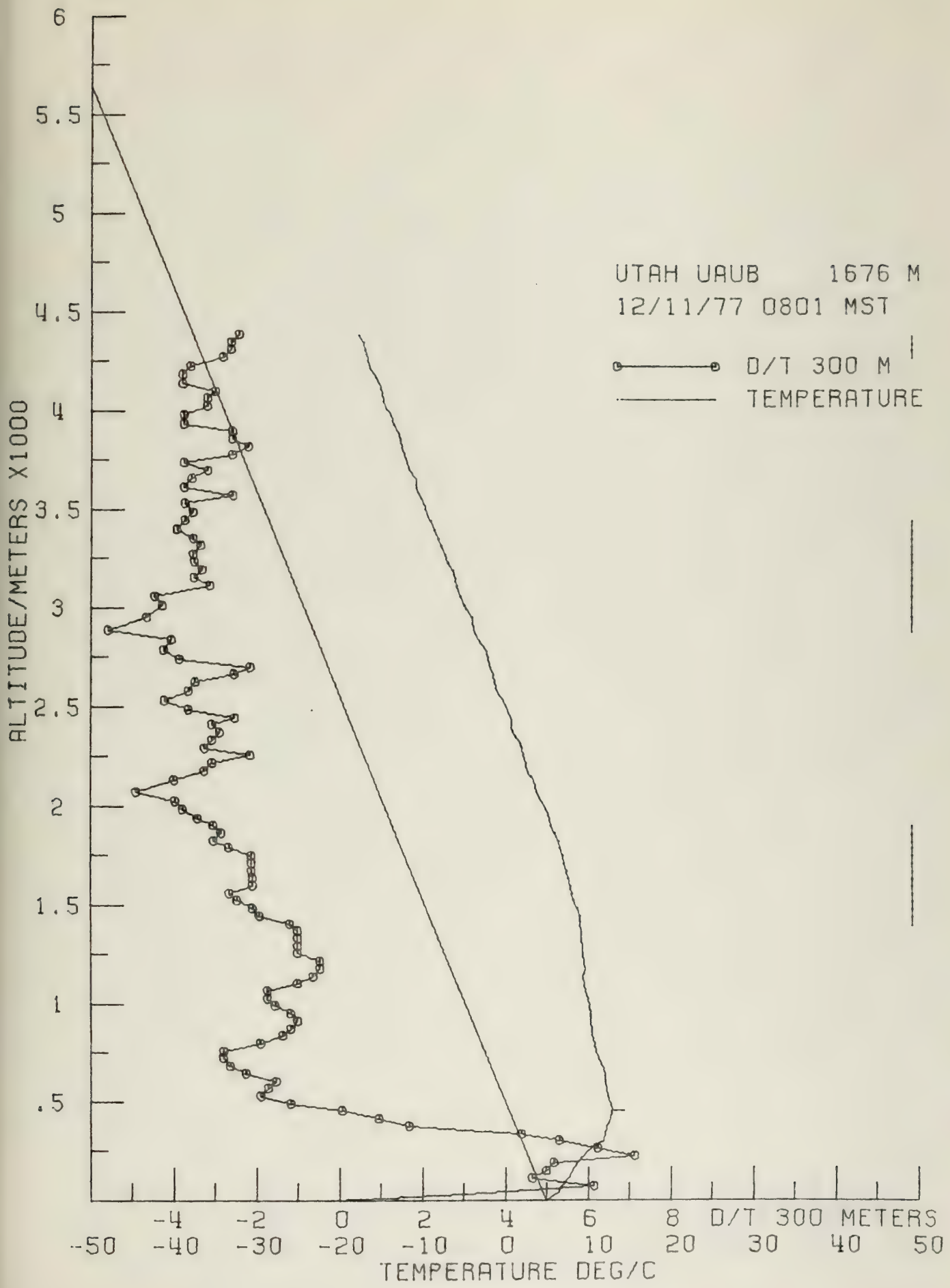

UTAH UAUB 1676 M
12/03/77 1332 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

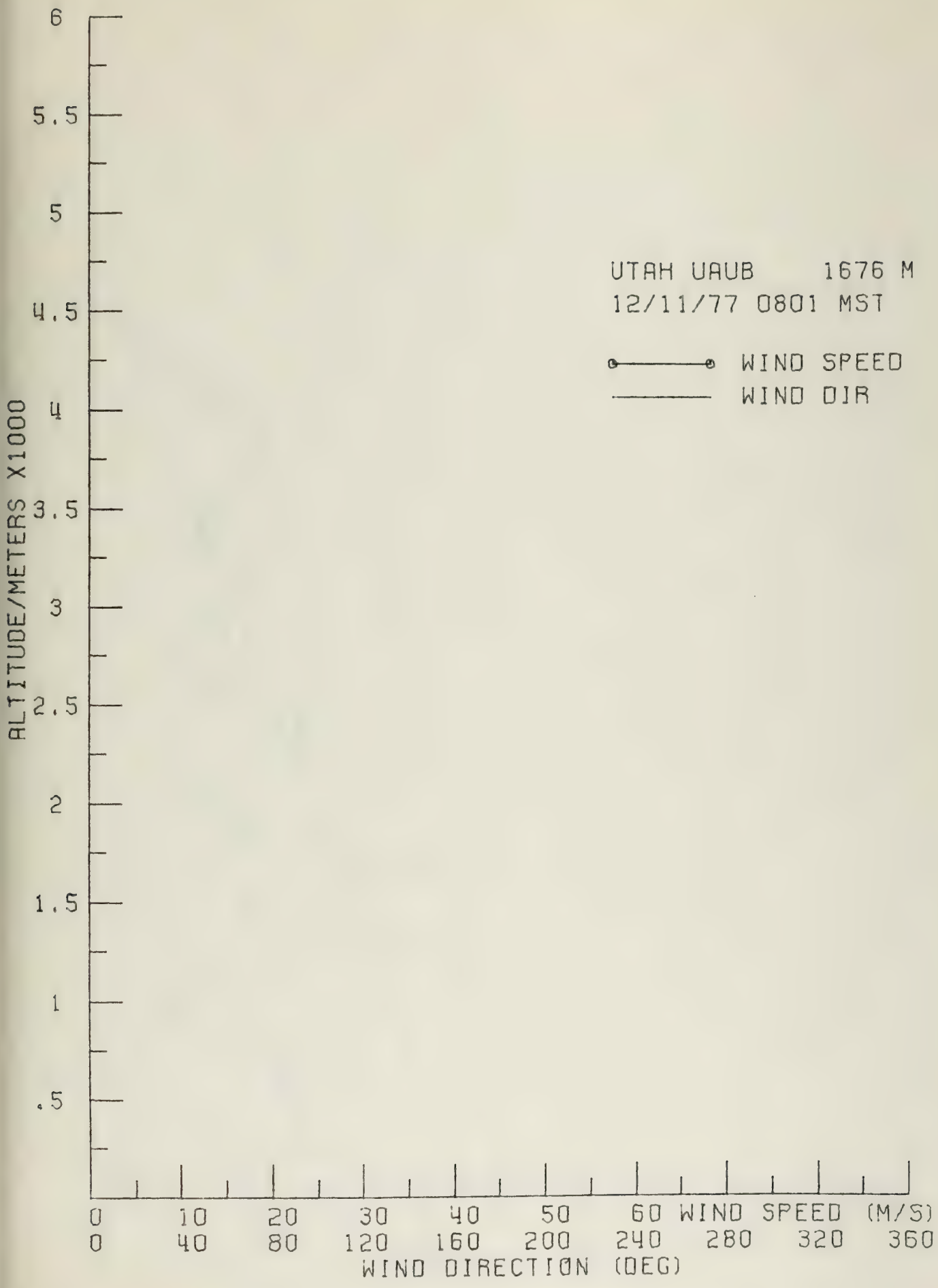

UTAH UAUB 1676 M
12/05/77 1404 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/05/77 1404 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/07/77 1401 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/07/77 1401 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/11/77 0801 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/11/77 0801 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
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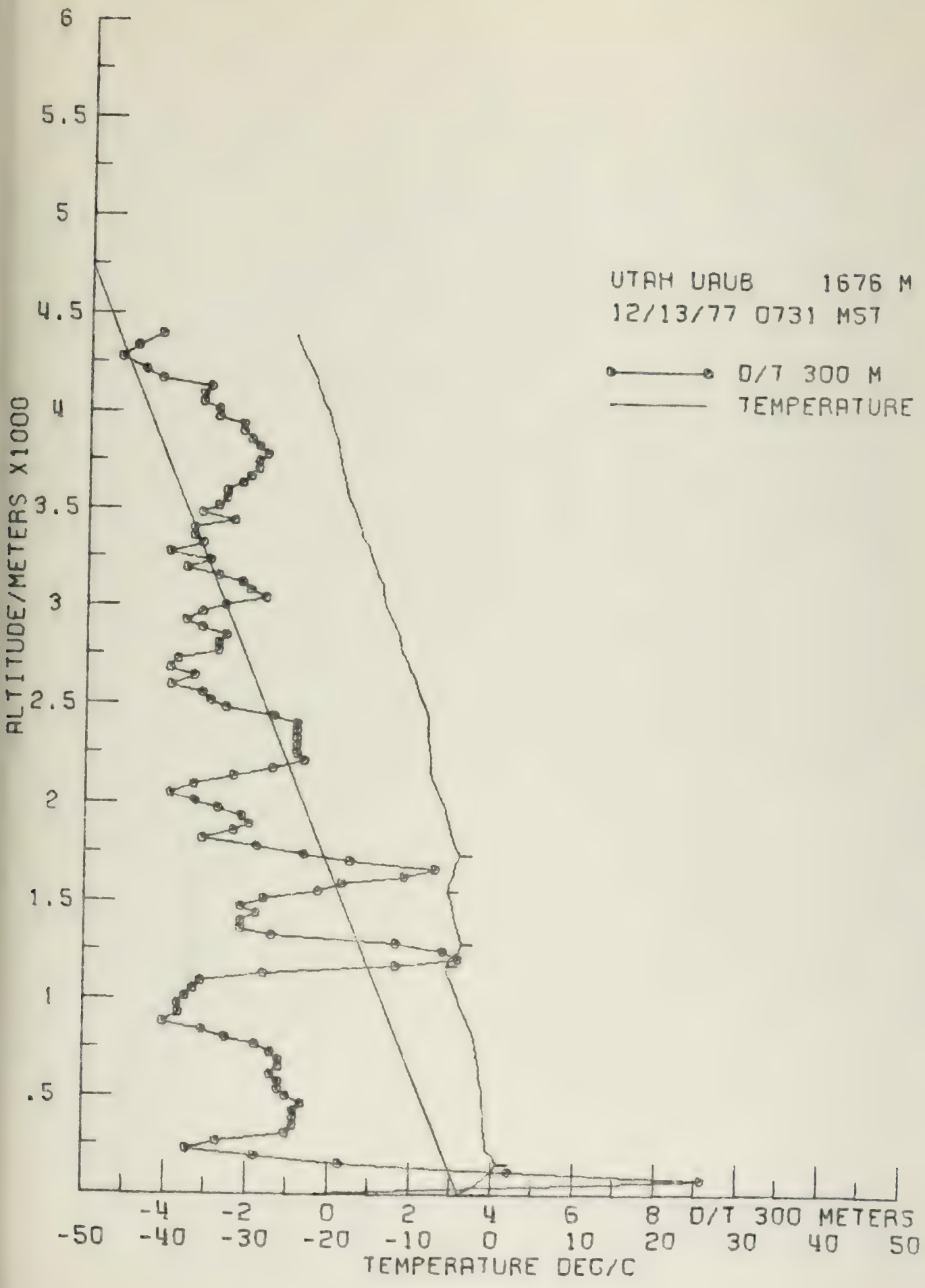
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/13/77 0731 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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5.5
5
4.5
4
3.5
3
2.5
2
1.5
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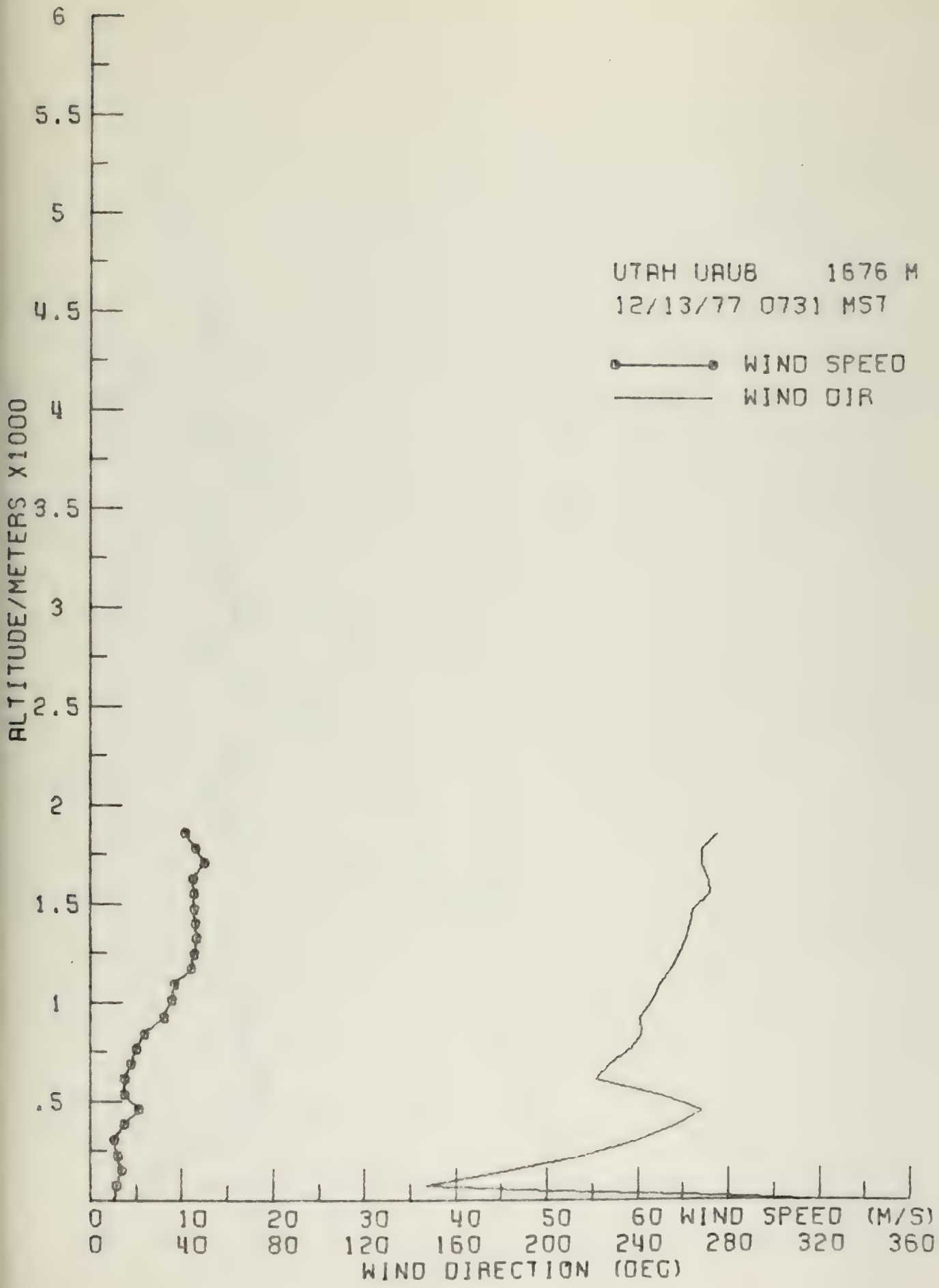
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAU8 1676 M
12/13/77 0731 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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4
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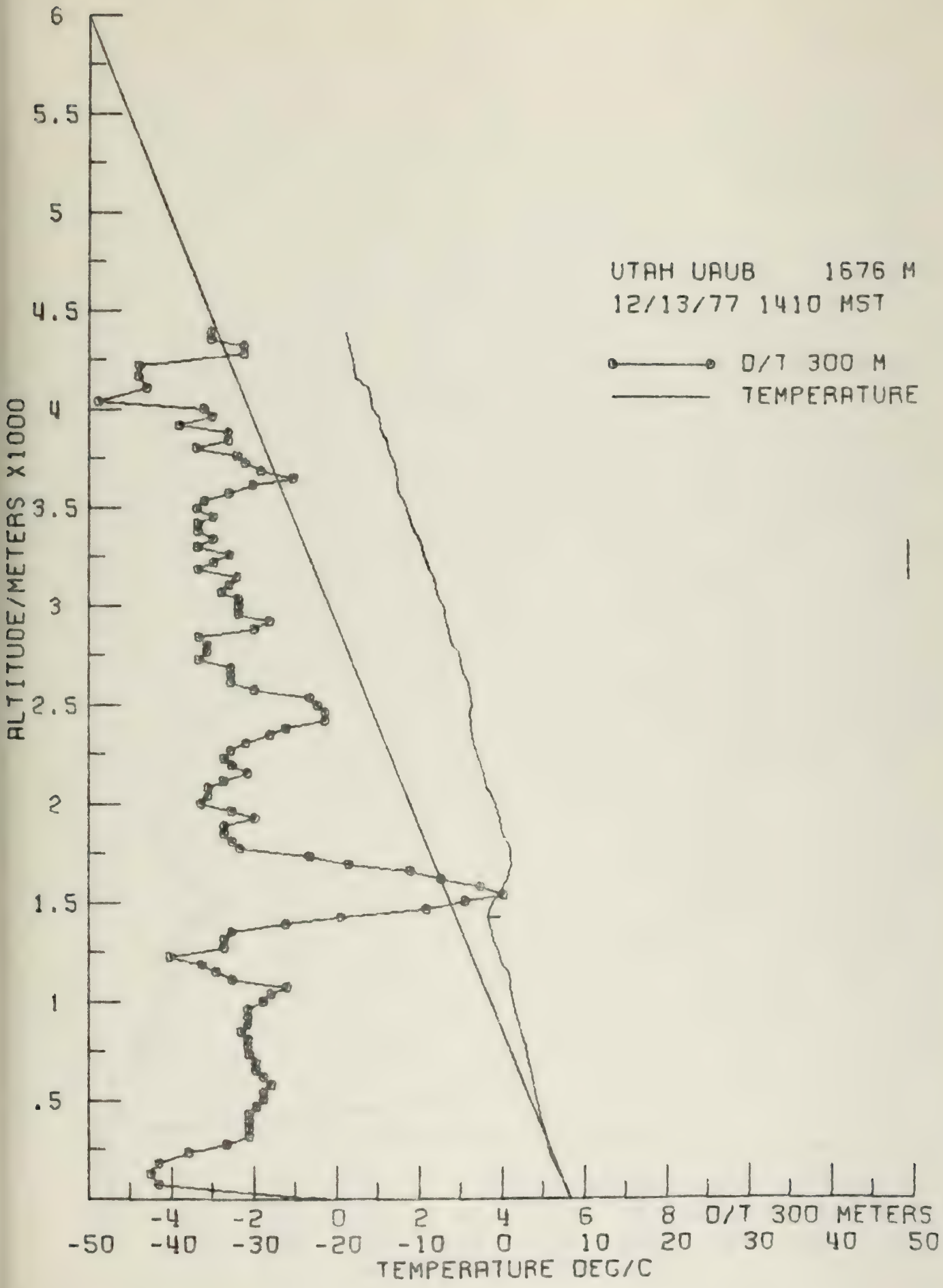
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/13/77 1410 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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4.5
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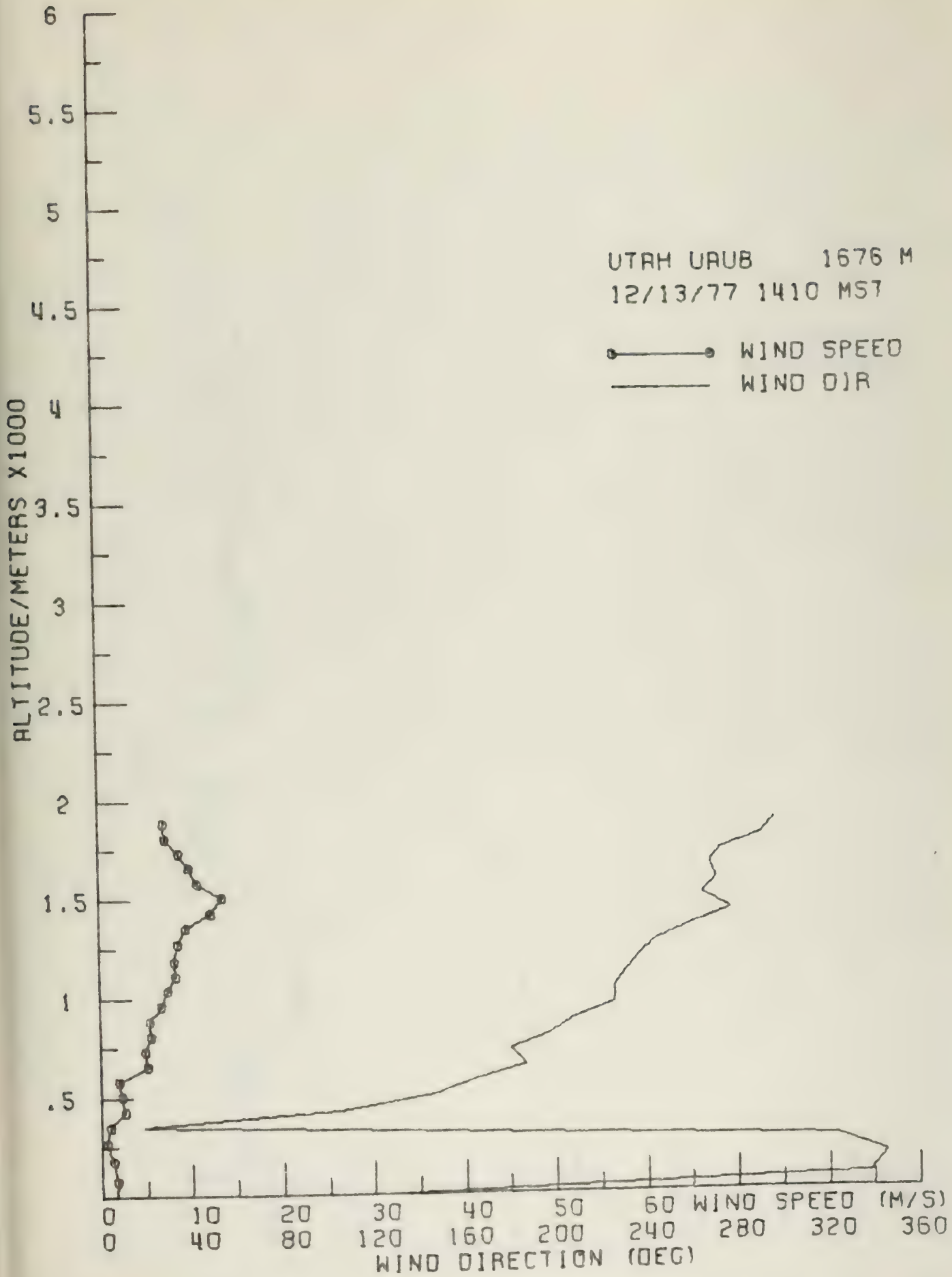
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/13/77 1410 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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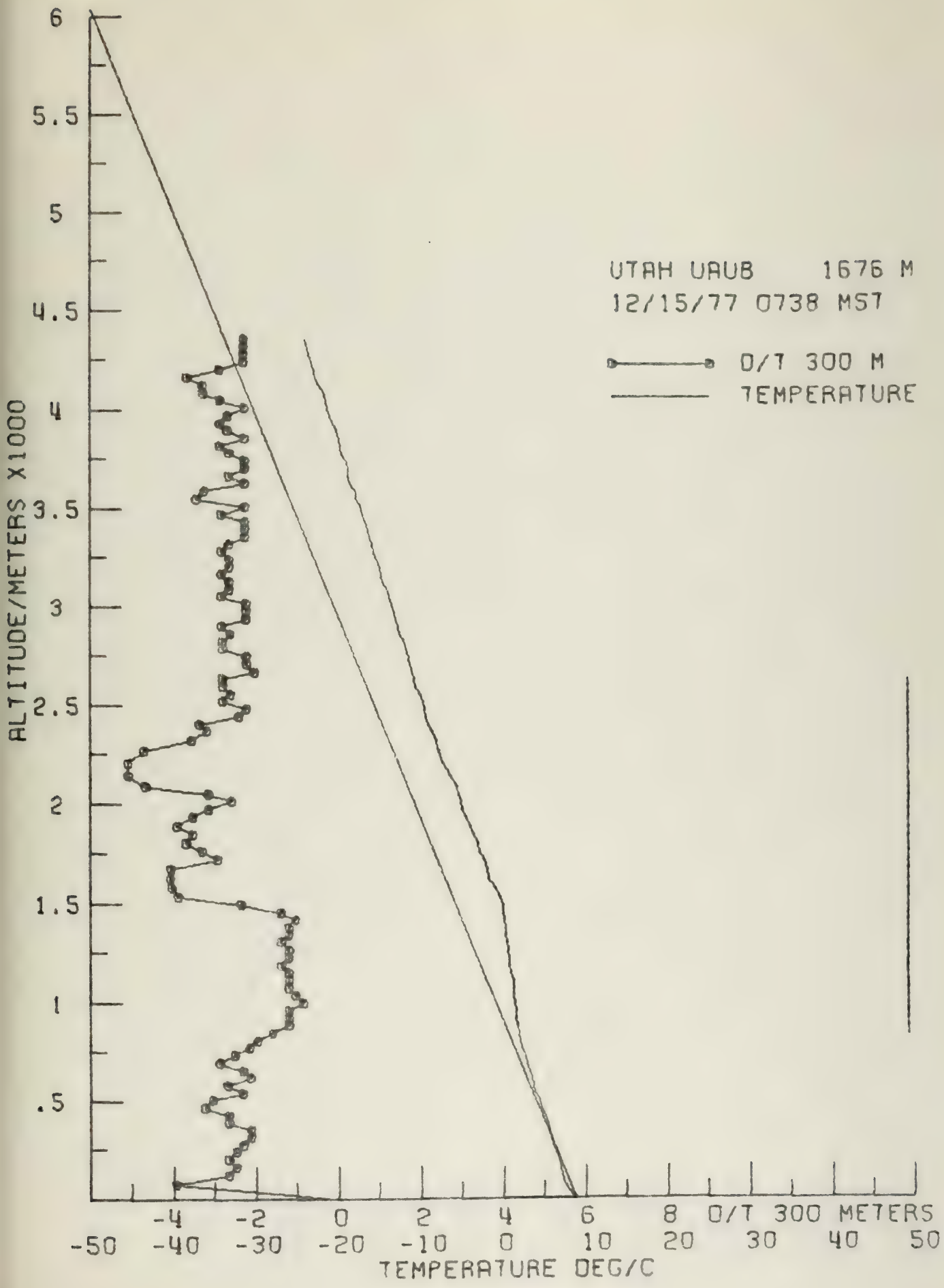
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/15/77 0738 MST
O/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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5.5
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4.5
4
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2.5
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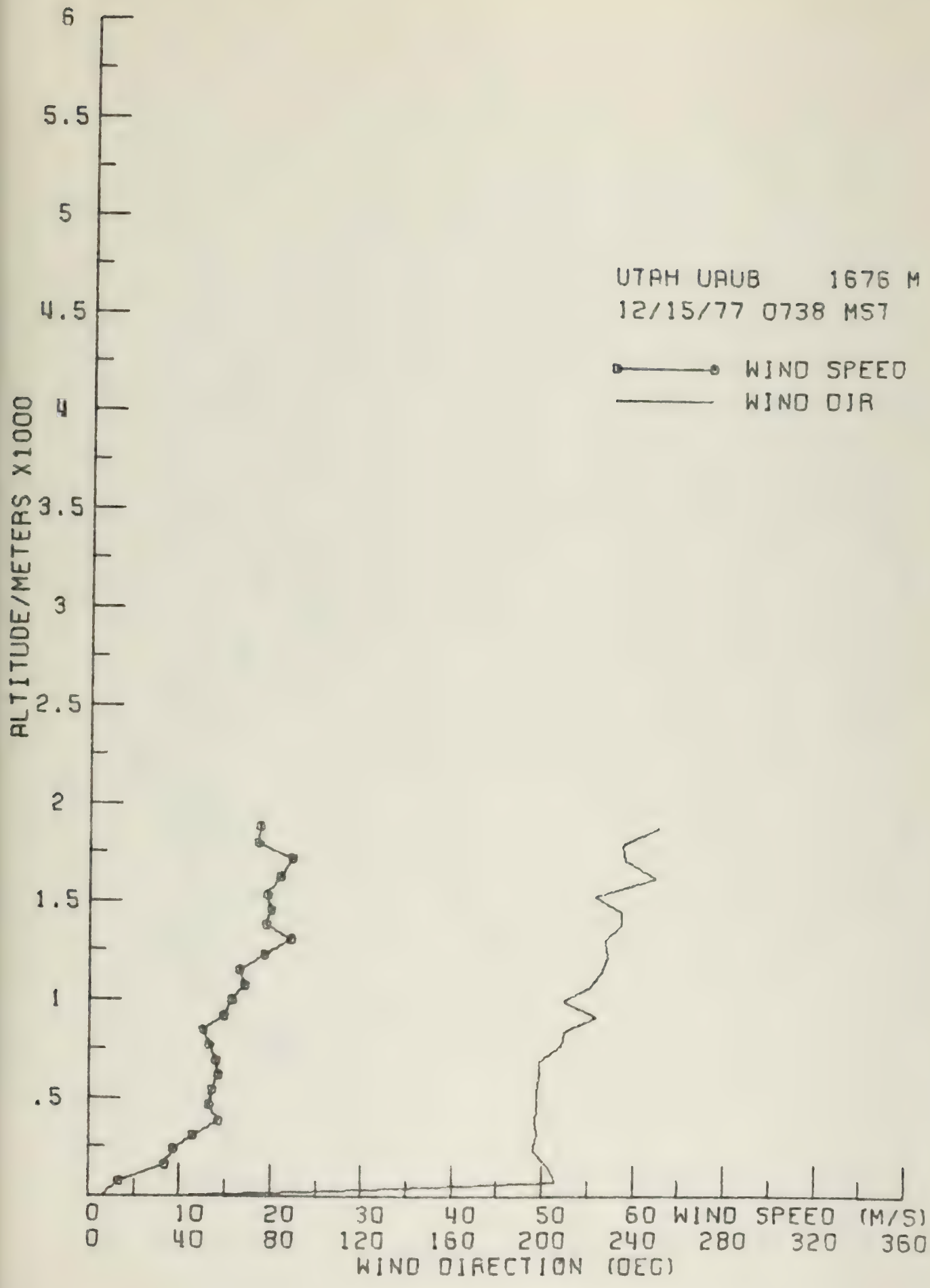
1.5
1
.5
-4 -2 0 2 4 6 8 O/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/15/77 0738 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
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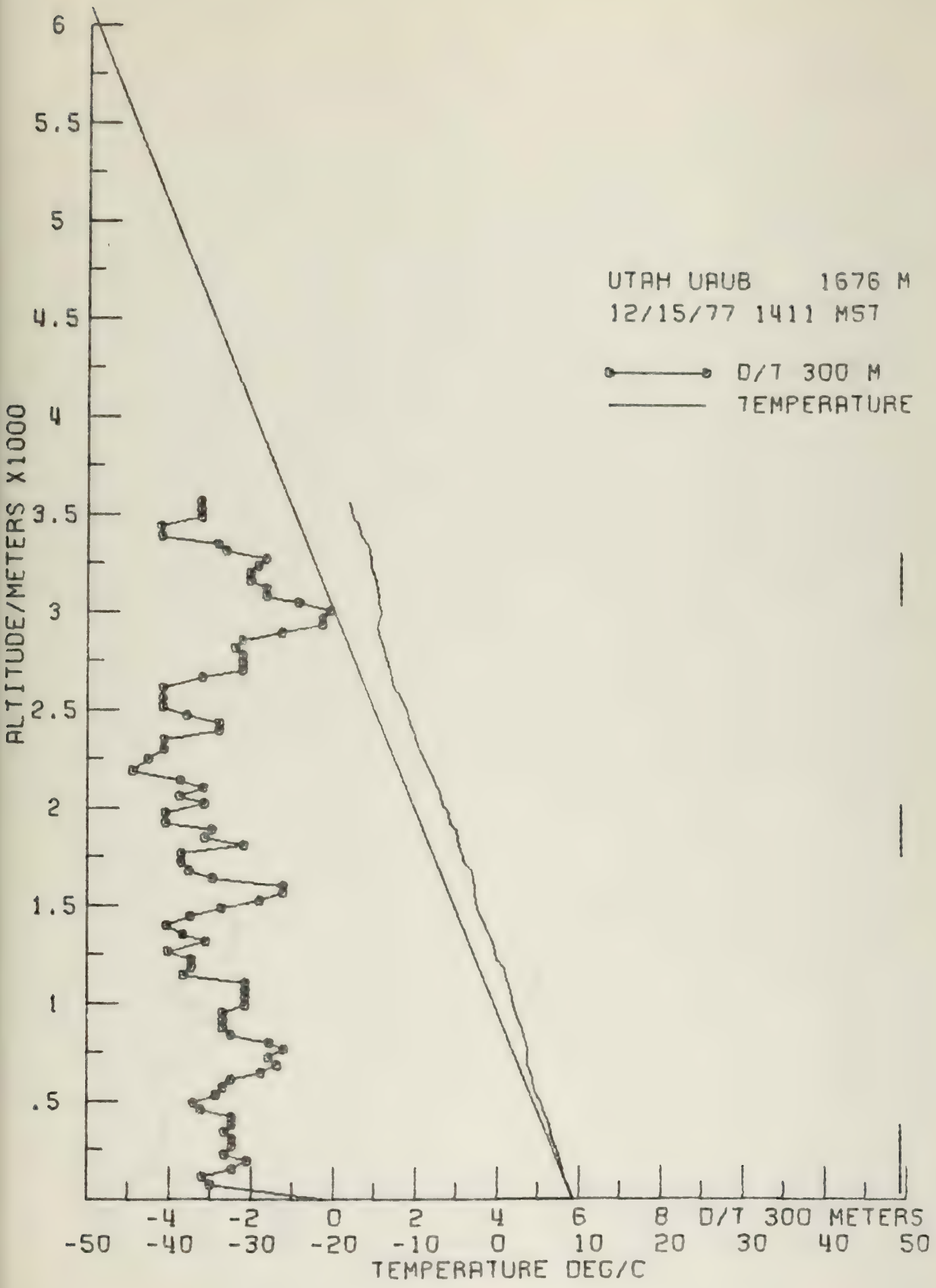
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/15/77 1411 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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-4
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2
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8
D/T 300 METERS
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-20
-10
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10
20
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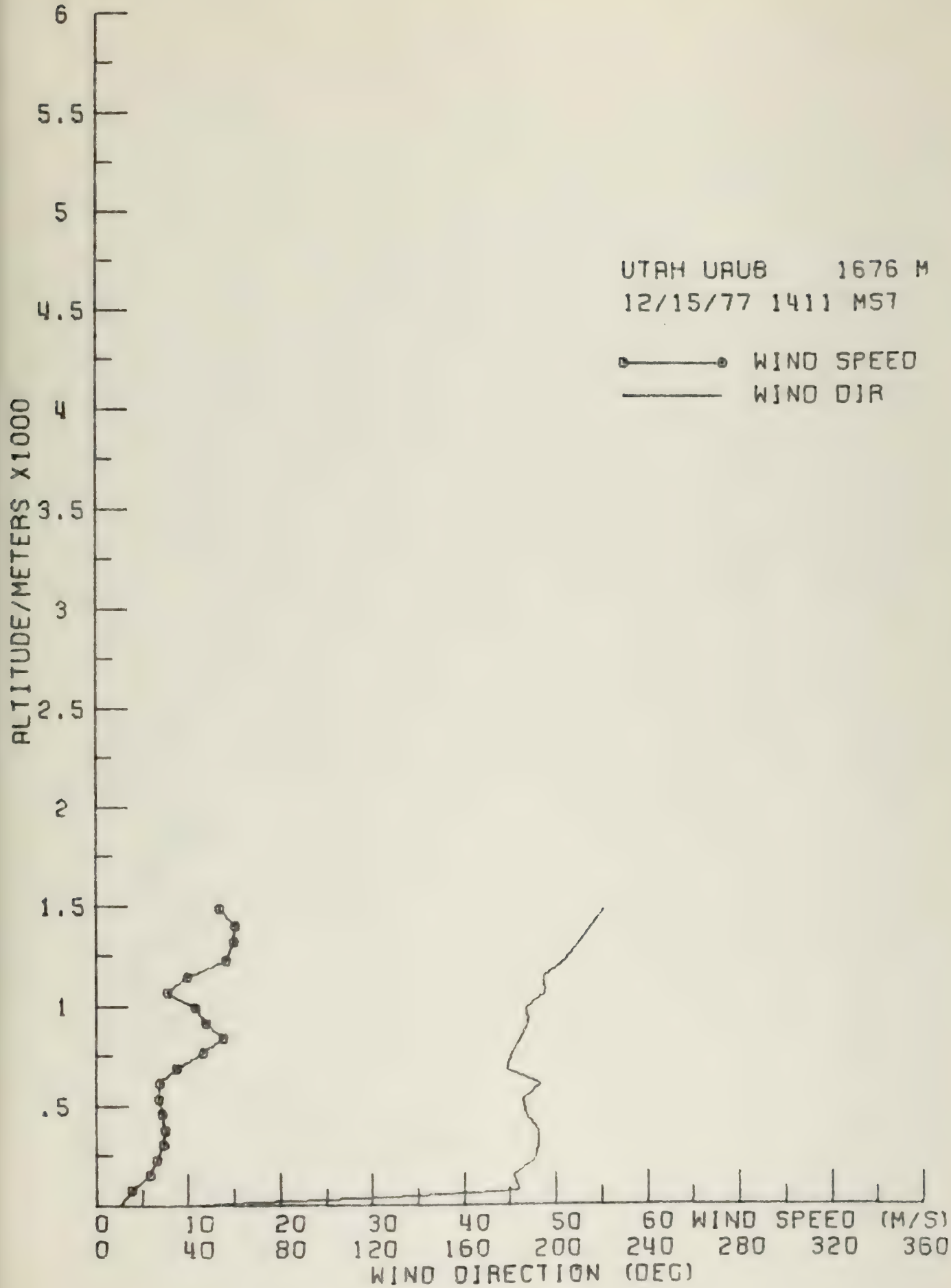
40
50
TEMPERATURE DEG/C


UTAH UBUB 1676 M
12/15/77 1411 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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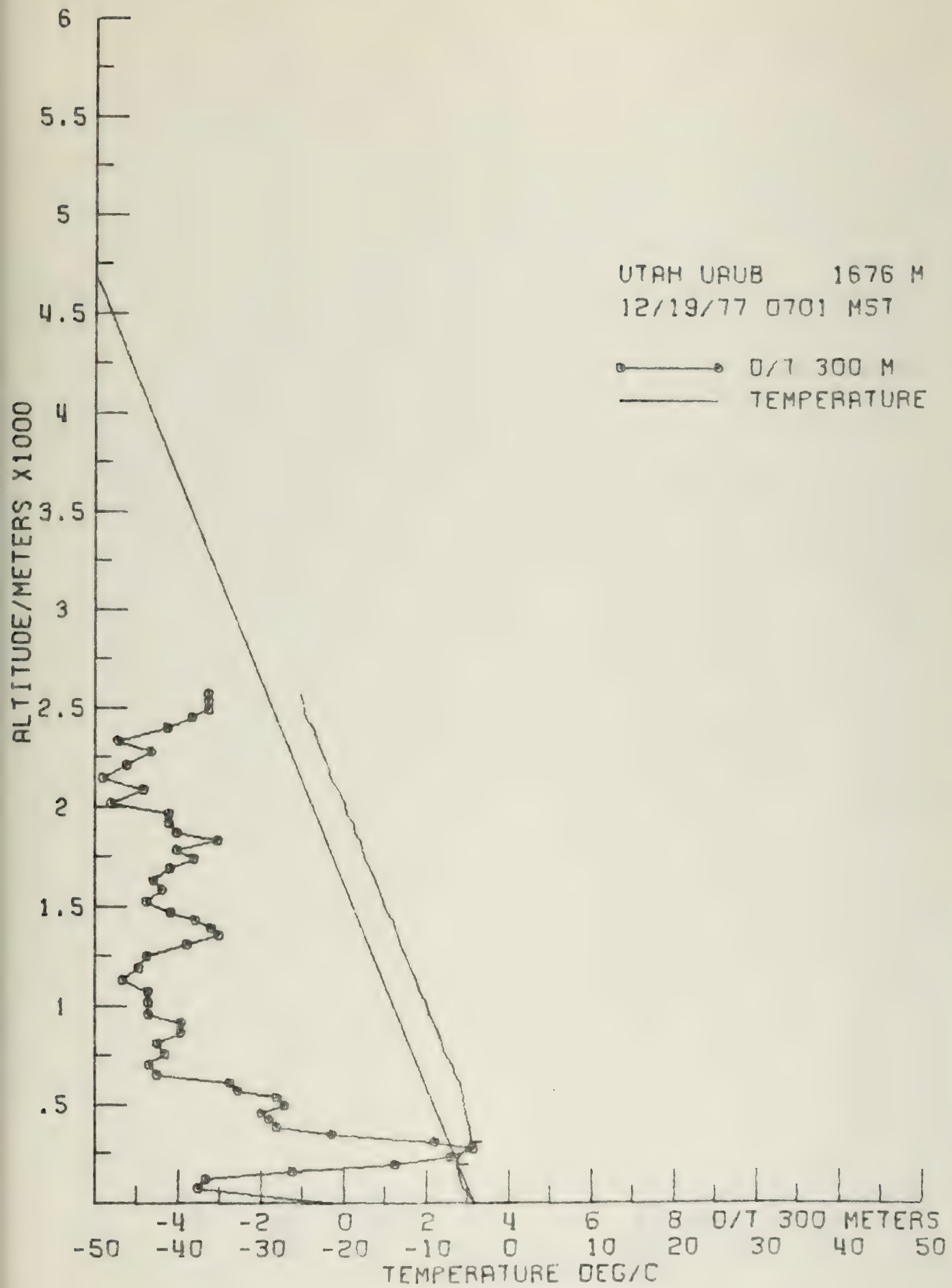
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/19/77 0701 MST
O/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
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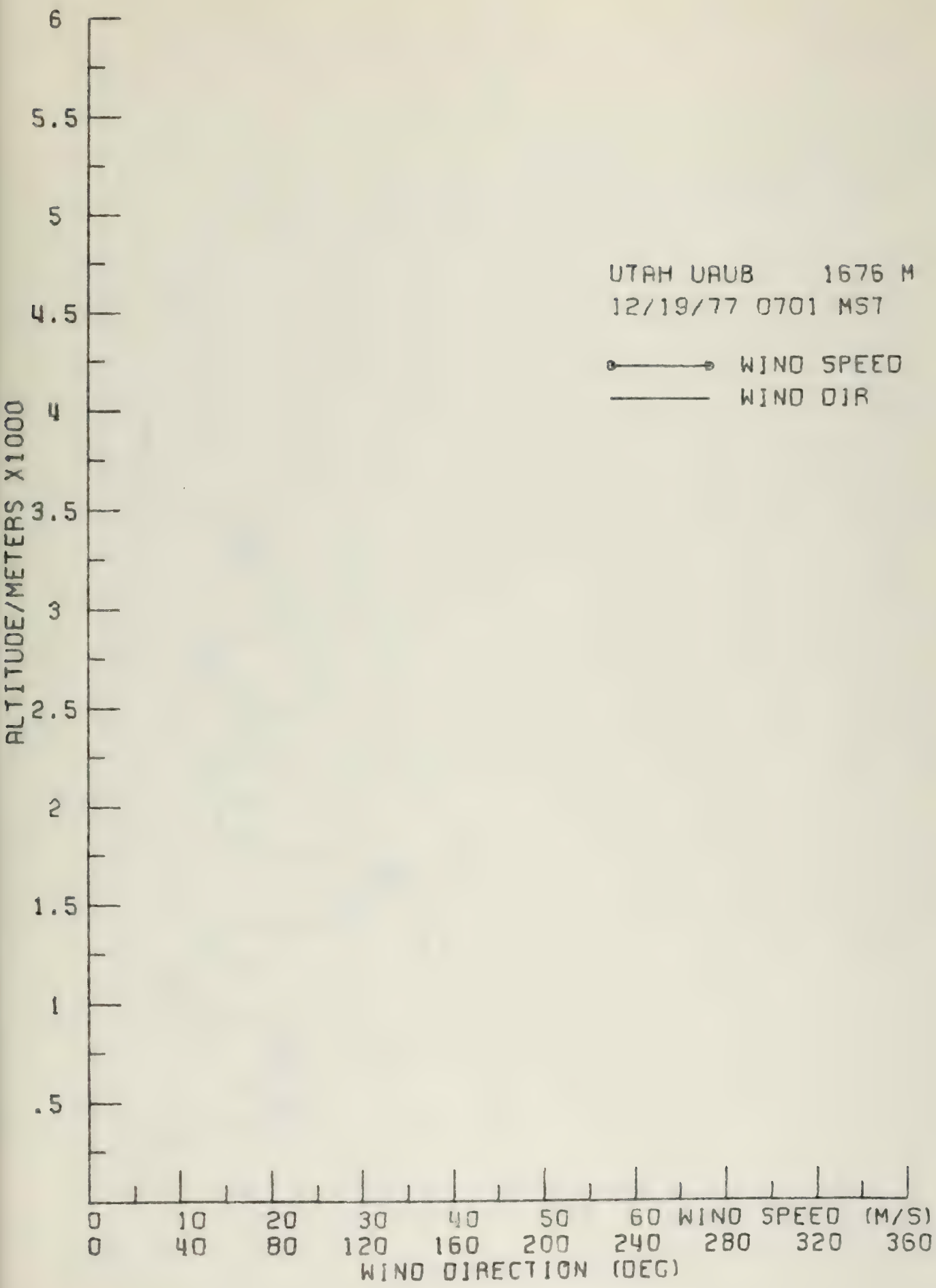
-4 -2 0 2 4 6 8 O/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/19/77 0701 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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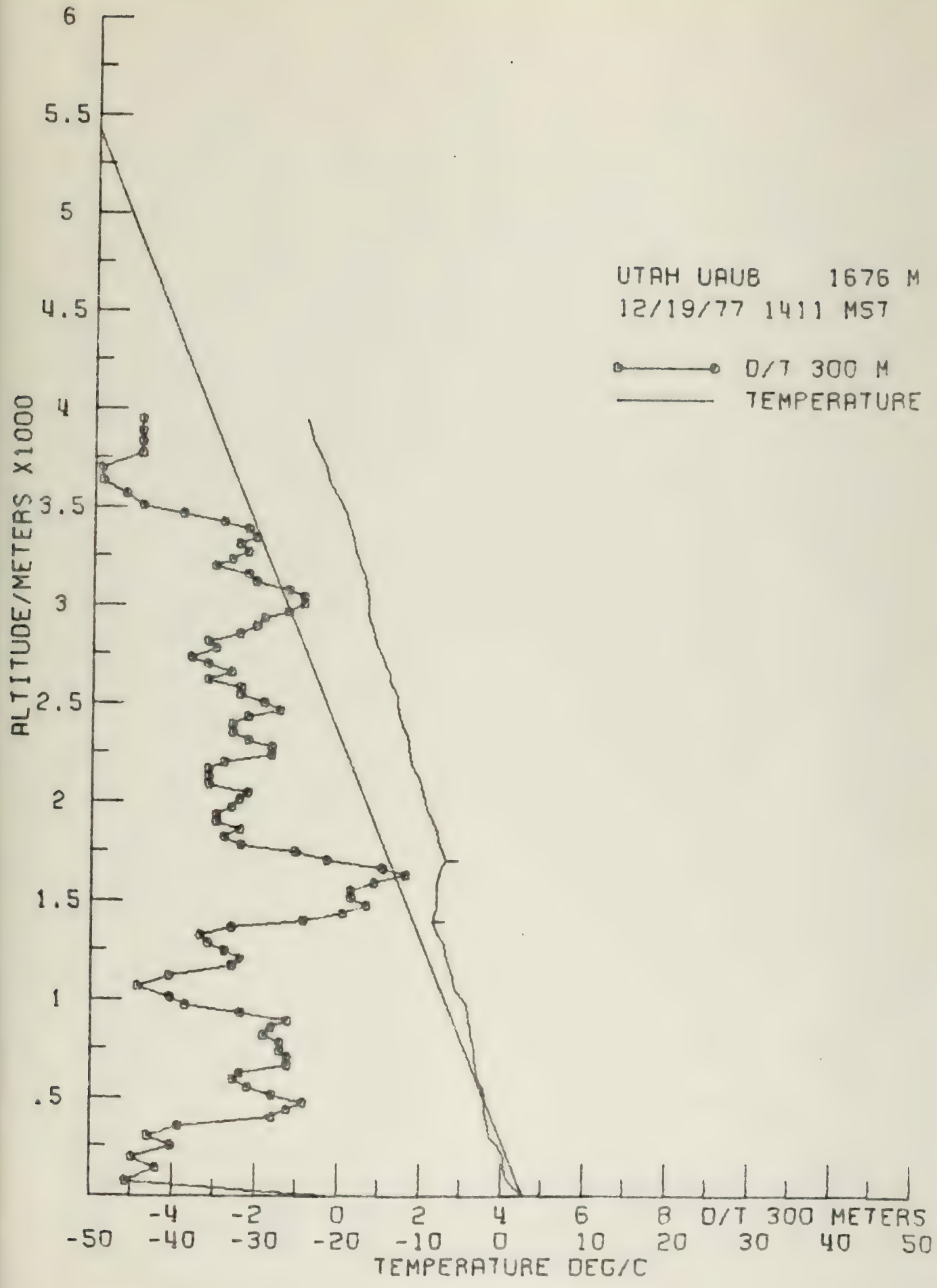
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/19/77 1411 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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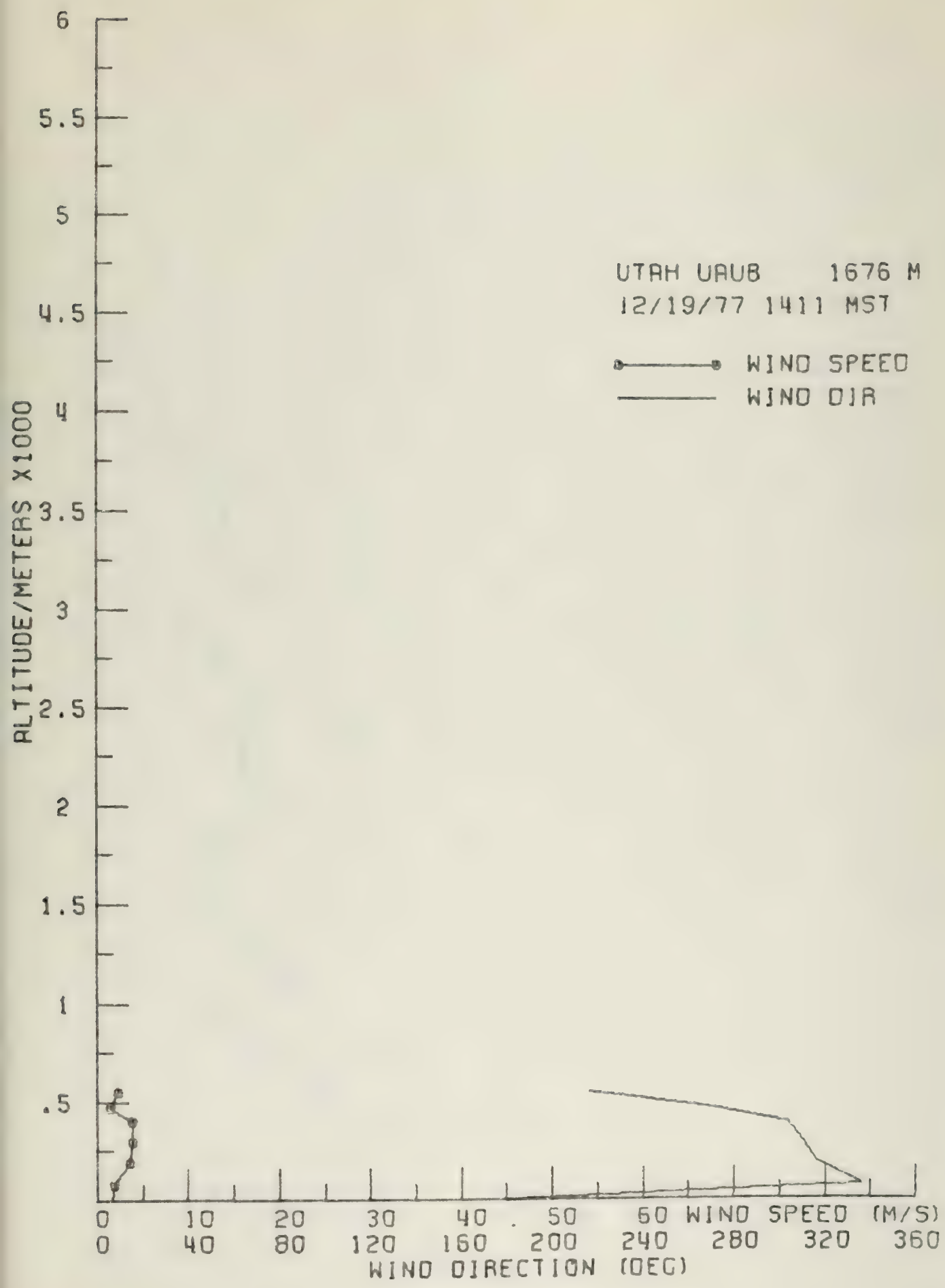
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/19/77 1411 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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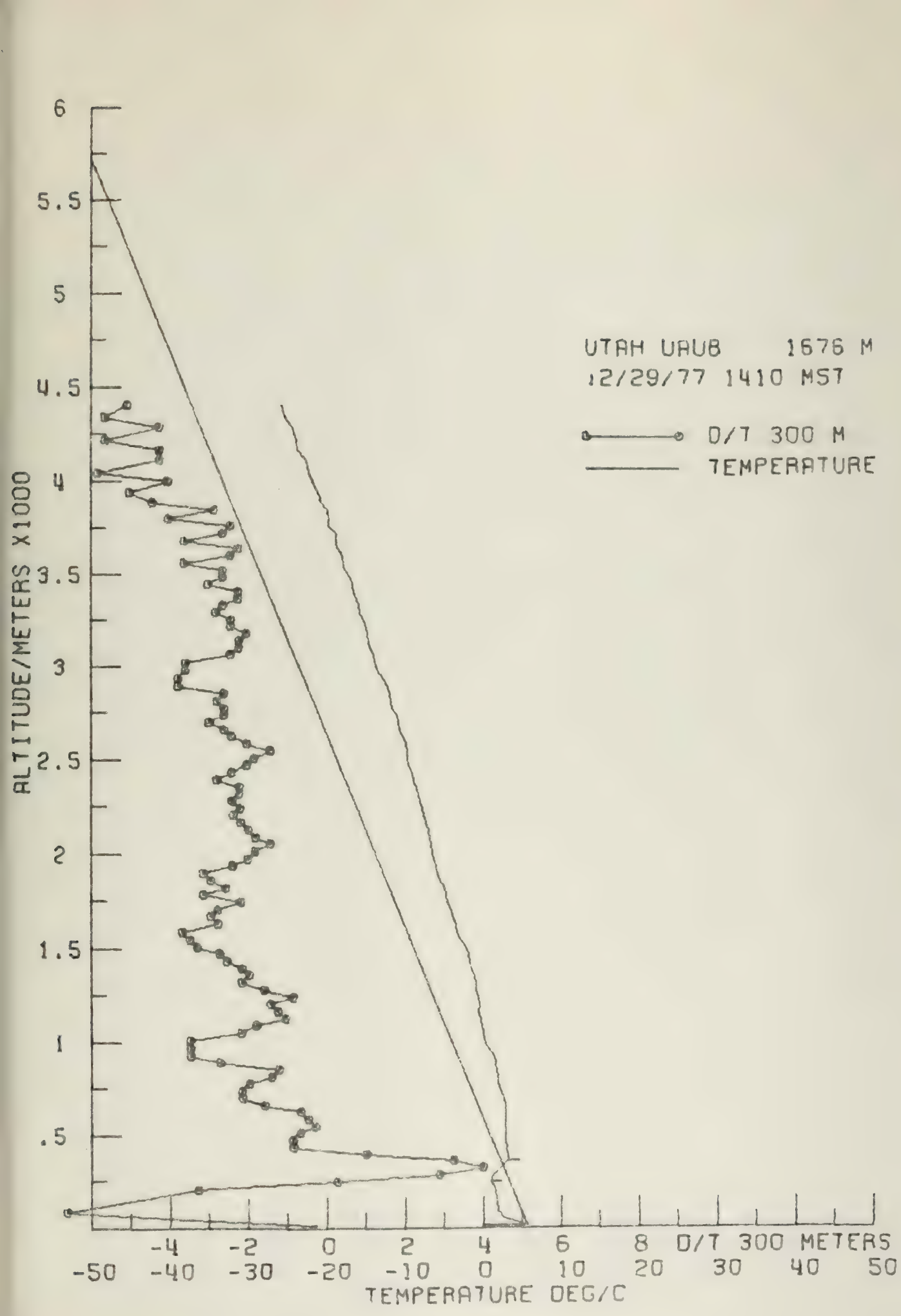
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
12/29/77 1410 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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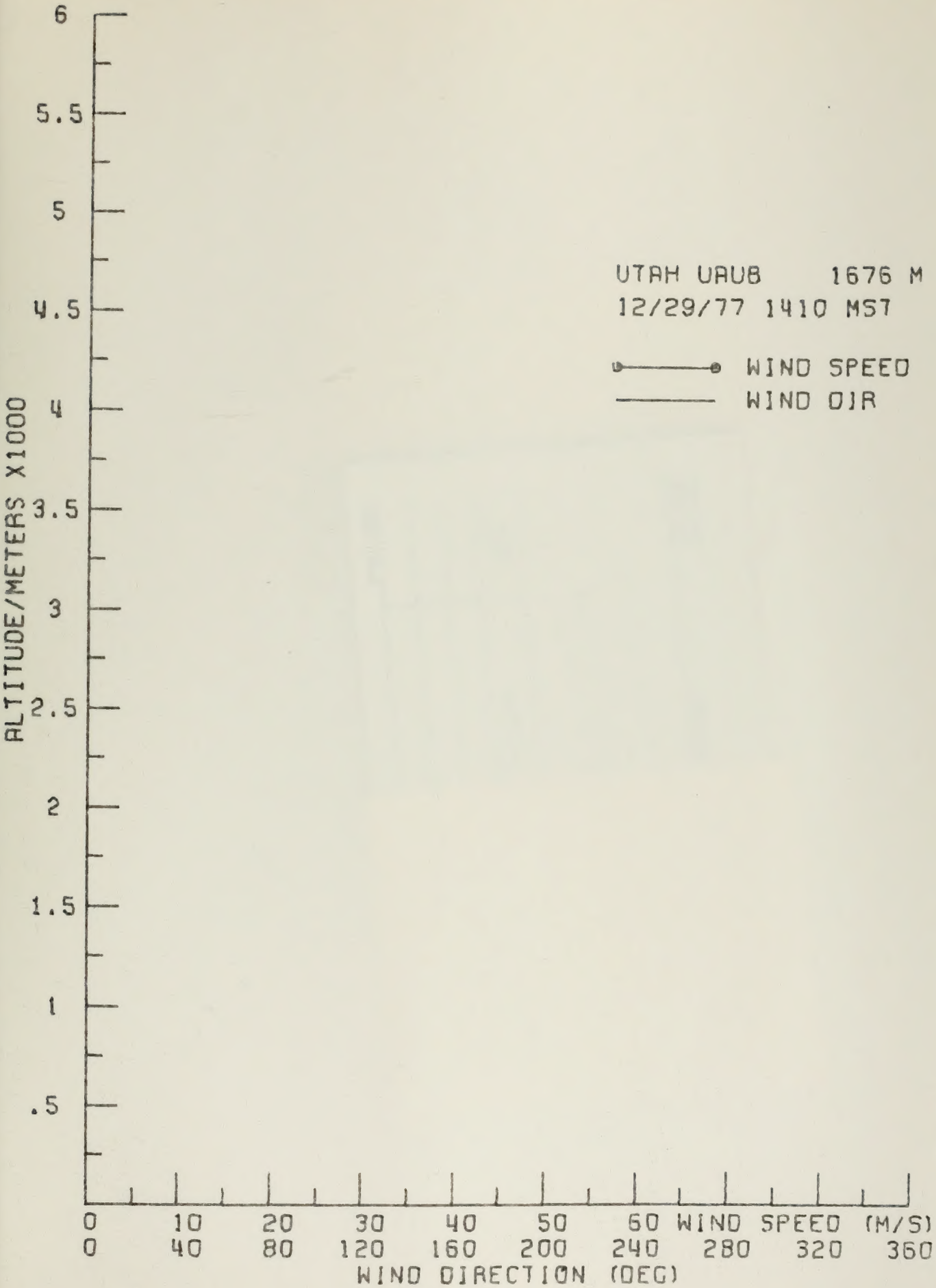
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
12/29/77 1410 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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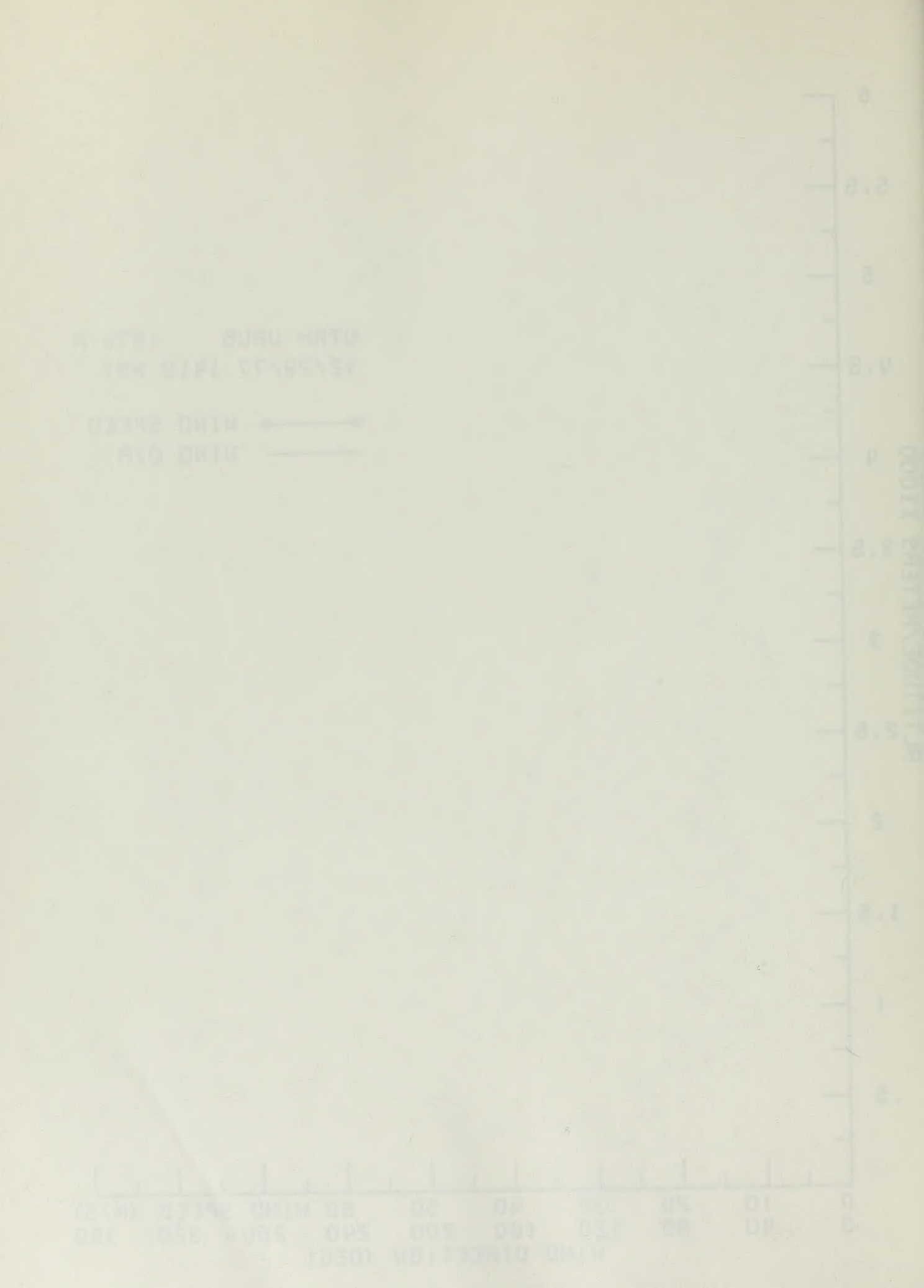
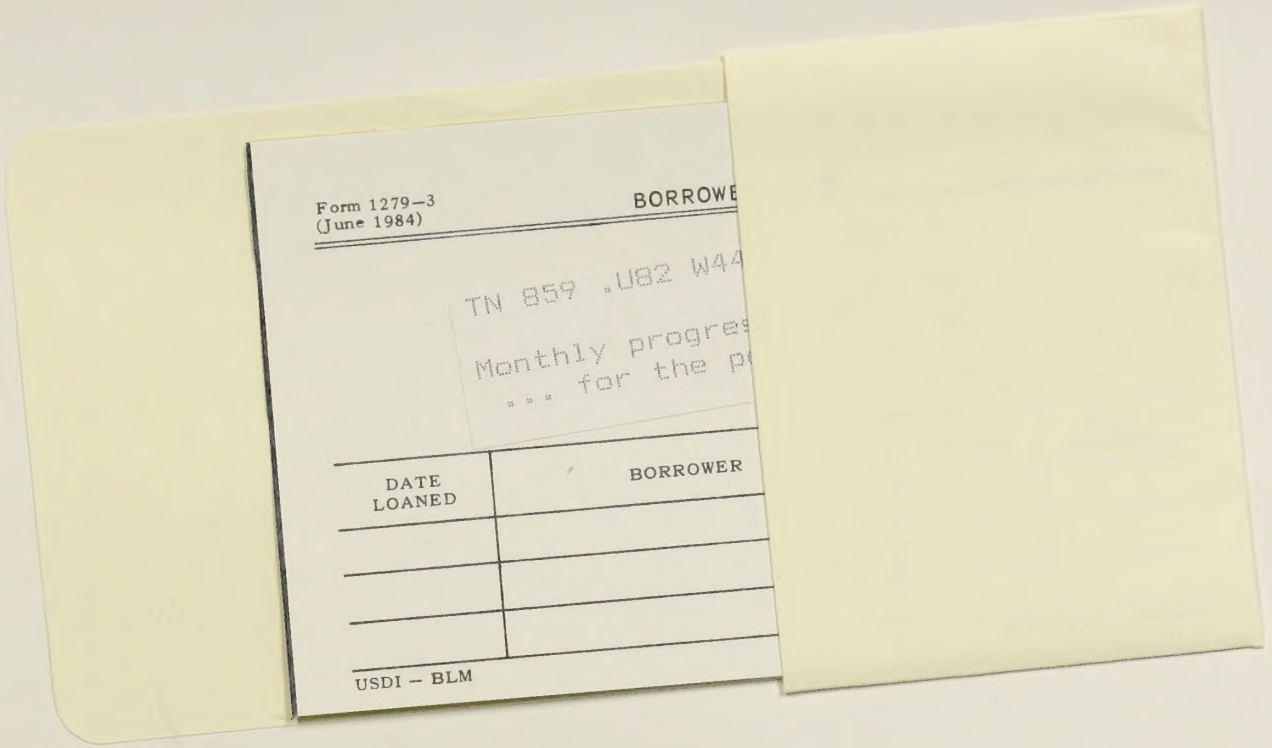
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)





Form 1279–3
(June 1984)

BORROWE

DATE LOANED	BORROWER

USDI – BLM